Technical Memorandum No. 4.3

Interstate 95 Corridor Implementation Plan for Florida's Principal FIHS Limited-Access Corridors

Prepared for:

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List of Acronyms

AADT ..... Average Annual Daily Traffic
AHS..... Automated Highway System
APTS.....Advanced Public Transportation System
ARG .....Autonomous Route Guidance
ATIS.....Advanced Traveler Information System
ATMS .....Advanced Traffic Management System
AVSS .....Advanced Vehicle Safety System
CAD ..... Computer-Aided Dispatch
CCTV .....Closed-Circuit Television
CMS ..... Changeable Message Sign
CVO .....Commercial Vehicle Operations
DASH..... Daytona Area Smart Highways
DHSMV ..... Department of Highway Safety & Motor Vehicles
DMS.....Dynamic Message Sign
DOT .....Department of Transportation
DRG .....Dynamic Route Guidance
E-911.....Enhanced 911
EPS..... Electronic Payment System
ETC.....Electronic Toll Collection
FDOT ..... Florida Department of Transportation
FFN ..... Florida Fiber Network
FON..... Fiber Optic Network
FHP .....Florida Highway Patrol
FHWA.....Federal Highway Administration
FIHS.....Florida Intrastate Highway System
FMS.....Freeway Management System
HAZMAT ..... Hazardous Materials
HOV .....High Occupancy Vehicle
HPMS..... Highway Performance Monitoring System
ICC.....Interstate Commerce Commission
IMS .....Incident Management System
ITS.....Intelligent Transportation System

LOA ..... Letters of Agreement
MCO ..... Maintenance and Construction Operations
MDX ..... Miami-Dade Expressway Authority
MOU ..... Memorandum of Understanding
MPO ..... Metropolitan Planning Organization
NITSA ..... *National Intelligent Transportation System Architecture*
RCC ..... Regional Communications Center
RCI ..... Roadway Characteristics Inventory
RR Service Patrols ..... Road Ranger Service Patrols
RWIS ..... Road Weather Information System
SEP-14 ..... Special Experimental Project No. 14
SIS ..... Strategic Intermodal System
SMIS ..... Surveillance Motorist Information System
TMC ..... Traffic Management Center
VMT ..... Vehicle Miles Traveled
VOTRAN ..... Volusia County Transit Agency
VPD ..... Vehicles Per Day
WIM ..... Weigh-in-Motion

1. Introduction

1.1 Purpose

This implementation plan was prepared to outline a series of priorities, conceptual project descriptions, and an estimate of project costs to deploy intelligent transportation systems (ITS) along the Interstate 95 (I-95) corridor. This report draws extensively on the *ITS Corridor Master Plans* for the principal Florida Intrastate Highway System (FIHS) limited-access corridors. These projects were defined following a systems engineering approach that reflects the user needs, issues, problems, and objectives. These needs, issues, problems, and objectives were organized into a vision statement, mission statement, goals, objectives, and performance measures, and documented in a series of user services from the *National ITS Architecture (NITSA)* that include consideration of the Evacuation Coordination and Maintenance and Construction Operation (MCO) User Services outlined in *Technical Memorandum No. 2 – ITS Needs Model*. Market packages were identified that satisfy the user services. The market packages were then mapped to projects recommended for advancement along the corridor. This approach provides traceability of the recommended projects to the vision, goals, and objectives developed in concert with the stakeholders for the corridor.

1.2 Corridor Description

The limits of the I-95 corridor are from the southern terminus of U.S. 1 in Miami-Dade County to the Georgia State Line. This corridor will also include Interstate 195 (I-195) and Interstate 395 (I-395) in Miami-Dade County, Interstate 595 (I-595) in Broward County, and Interstate 295 (I-295)/9A around Jacksonville in Duval County. The I-95 corridor is primarily classified as metropolitan and urban in the southeast portion of the state and becomes more rural in character as it traverses the central-eastern portion of the state. Still, the corridor area type varies to urban as it passes through some of the smaller urban areas and cities along the east coast. Once the corridor enters Duval County, it is classified as a metropolitan facility. Similarly, I-295 and SR 9A in Duval County are classified as metropolitan facilities. Additionally, the small segment of I-195, I-395, and I-595 located in Miami-Dade and Broward counties, respectively, are identified as metropolitan facilities. The corridor traverses several counties including Nassau, Duval, St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie, Martin, Palm Beach, Broward, and Miami-Dade counties. The corridor provides access to several major urban areas including Jacksonville, Daytona Beach, Melbourne, Palm Bay, Port Saint Lucie, West Palm Beach, Boca Raton, Pompano Beach, Ft. Lauderdale, and Miami. Figure 1.1 illustrates the corridor location. Currently, Florida Department of Transportation (FDOT) District 2 operates and maintains the interstate from Nassau to St. Johns counties; District 5 operates and maintains the interstate from Flagler to Brevard counties; District 4 operates and maintains the interstate from Indian River to Broward counties, and District 6 operates and maintains the interstate in Miami-Dade County.

Figure 1.1 – I-95 Corridor Location

1.3 Document Organization

This document is organized to be a standalone summary of the corridor-level analysis provided in support of the *ITS Program Plan* and to document the *ITS Corridor Master Plans* for the I-95 corridor.

Section 2 of this document details the current physical and operational characteristics along the I-95 corridor.

Section 3 presents the needs, issues, problems, and objectives defined along the FIHS limited-access corridors and details the mission and vision statements, and market packages selected for implementation along the corridor.

Section 4 details the identification of gaps in existing, programmed, and planned ITS services along the corridor as defined by the market package selection.

Section 5 discusses the proposed agency roles and responsibilities in the deployment, operations, and maintenance of the ITS.

Section 6 identifies the recommended conceptual ITS projects for the corridor and details the costs, benefits, and impacts associated with the deployment of the proposed projects.

Section 7 presents the report summary.

2. Legacy Systems

The following text identifies existing physical and operational conditions along the I-95 corridor as presented in *Technical Memorandum No. 1 – ITS Legacy Catalog* prepared for the FIHS *ITS Corridor Master Plans*:

- I-95 consists mainly of four lane segments in rural areas which expands to six, eight, and greater than eight lanes in the urban areas of Dade, Broward, Palm Beach, and Duval counties. The majority of I-295 is four lanes, while the segment located between Interstate 10 (I-10) and I-95 south is six lanes with several sections of eight or more lanes. Similar to I-295 north, SR 9A is a four-lane facility, with one small six-lane section. Both I-395 and I-195 consist of six lanes.

- I-95 has the greatest density of interchanges, which is not surprising considering the extent of urbanized areas along the corridor. Miami-Dade, Duval, Broward, and Palm Beach counties' urban areas contain a major portion of I-95's interchanges. I-95 in Miami-Dade County exhibits the greatest interchange density in the state, averaging an interchange every half mile. Several corridors with high interchange densities are the urban facilities such as I-395, I-195, and SR 9A. Each of these roadways has an interchange density of less than two miles per interchange. The interchange locations for I-95 are shown on Figure 2.1 and the corridor area types are illustrated in Figure 2.2.

- The I-95 corridor exhibits an unusually high concentration of accident locations. On the southeast portion of the I-95 corridor, high accident locations are primarily located at its intersection with the Turnpike or turnpike facilities such as the Sawgrass Expressway and the Homestead Extension of Florida's Turnpike (HEFT). The other significant clusters of high accident locations along I-95 occur in Indian River and St. Johns counties, and at the interchange with I-10 in Jacksonville. I-195 in Miami-Dade County reveals one high accident location, while I-395, I-595, I-295, and SR 9A remain clear. Typically, large interstate-to-interstate interchanges experience high accident volumes due to the complex nature of the weaving and merging patterns at these interchanges. The high crash frequency locations for I-95 are shown on Figure 2.3.

- Based on year 2000 statistics, the I-95 corridor has an average annual daily traffic (AADT) of 24,782 vehicles per day (vpd). The average traffic volume forecasts for the years 2010 and 2020 are 35,438 vpd and 49,929 vpd, respectively. These forecasts represent an increase of 30 percent from 2000 to 2010 and 29 percent from 2010 to 2020 for the entire corridor. Duval County contains the largest urban section of the corridor with an AADT of 83,907 vpd. Travel demand is expected to double (159,087 vpd) in Duval County by the year 2020 as well. Figures 2.4 through 2.6 illustrate the 2000, 2010, and 2020 AADT for the I-95 corridor.

Figure 2.1 – I-95 Corridor Interchange Locations

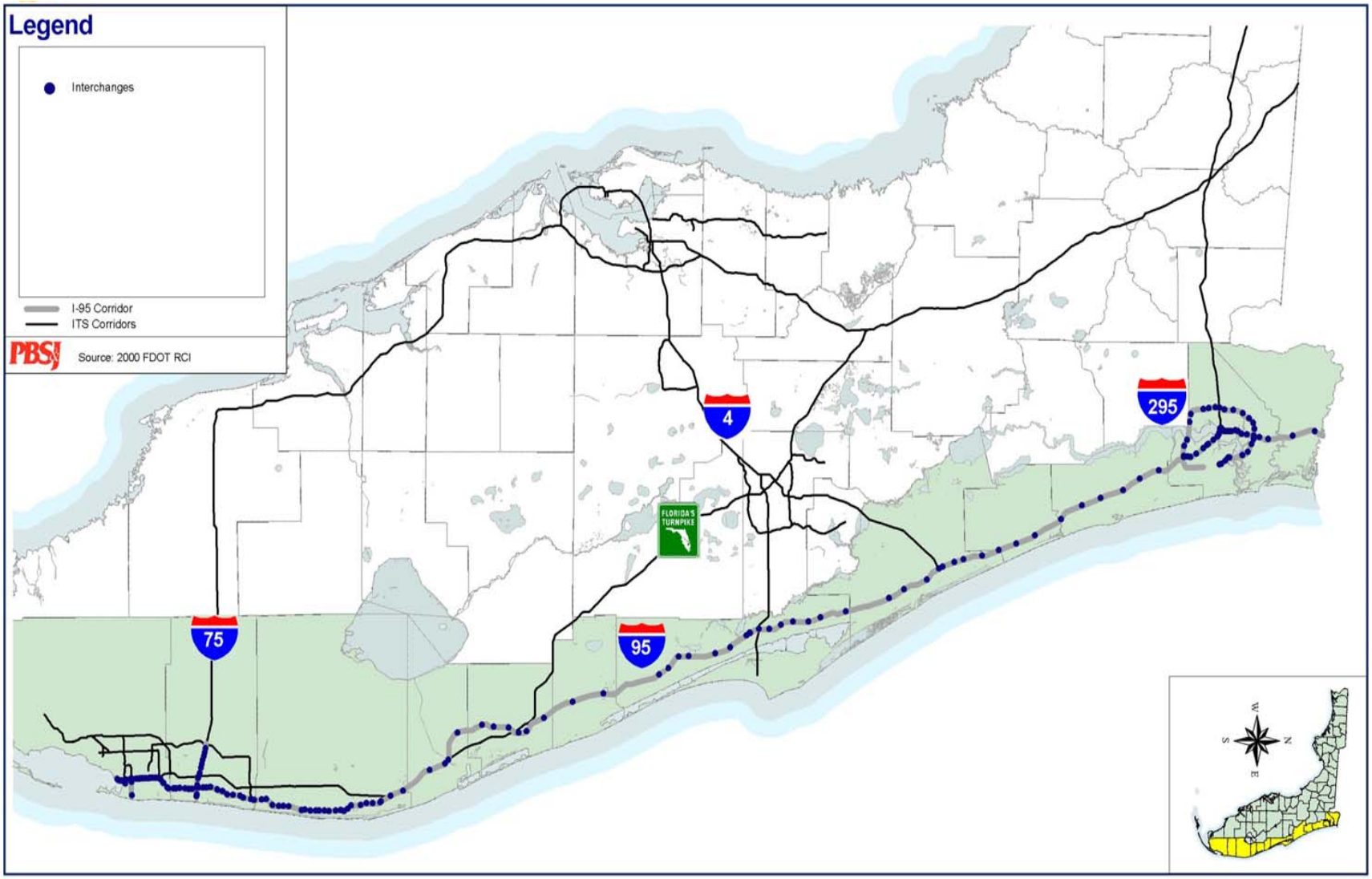


Figure 2.2 – I-95 Corridor Area Types

Figure 2.3 – I-95 Corridor High Crash Frequency Locations

Figure 2.4 – I-95 Corridor – 2000 AADT

Figure 2.5 – I-95 Corridor – 2010 AADT

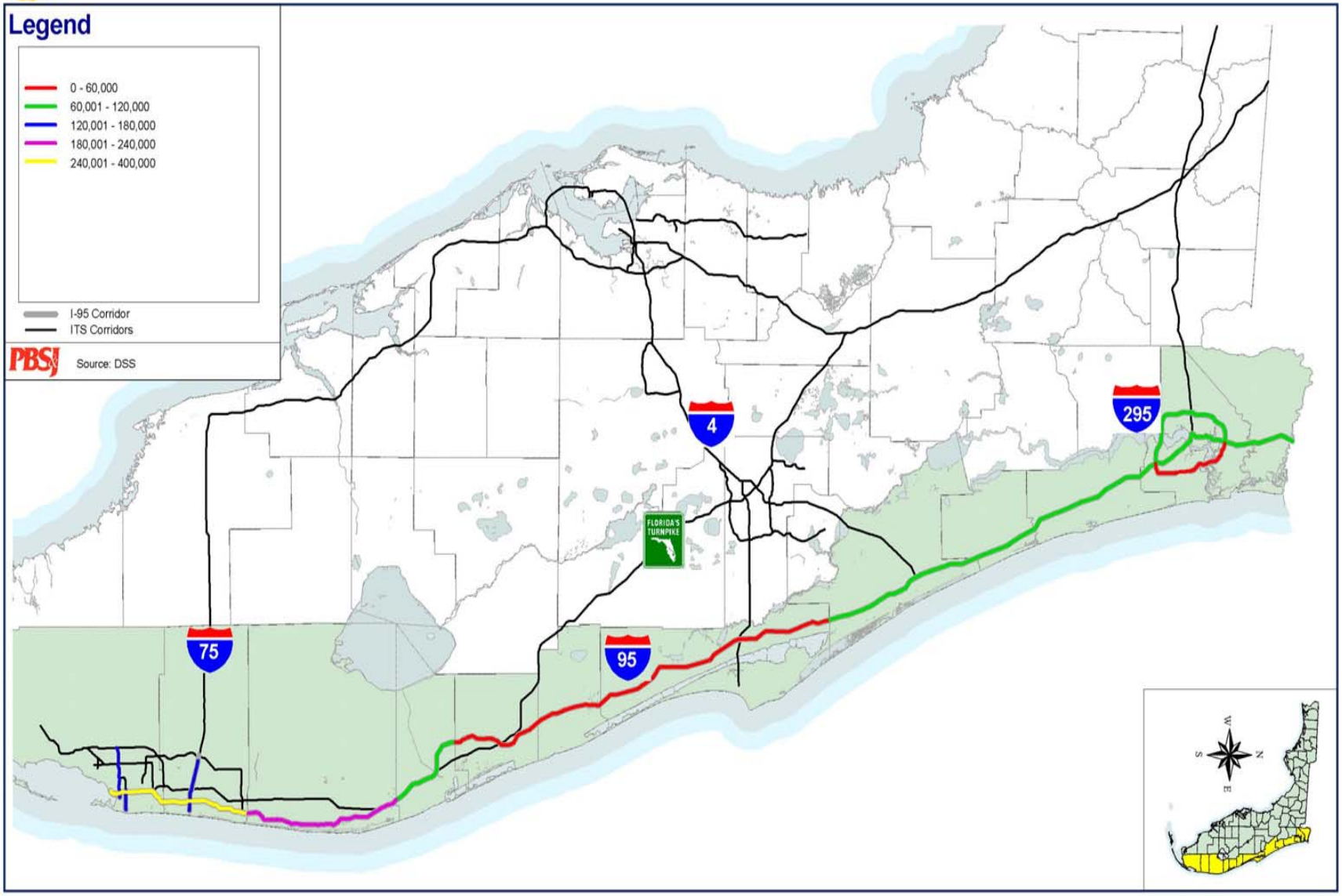
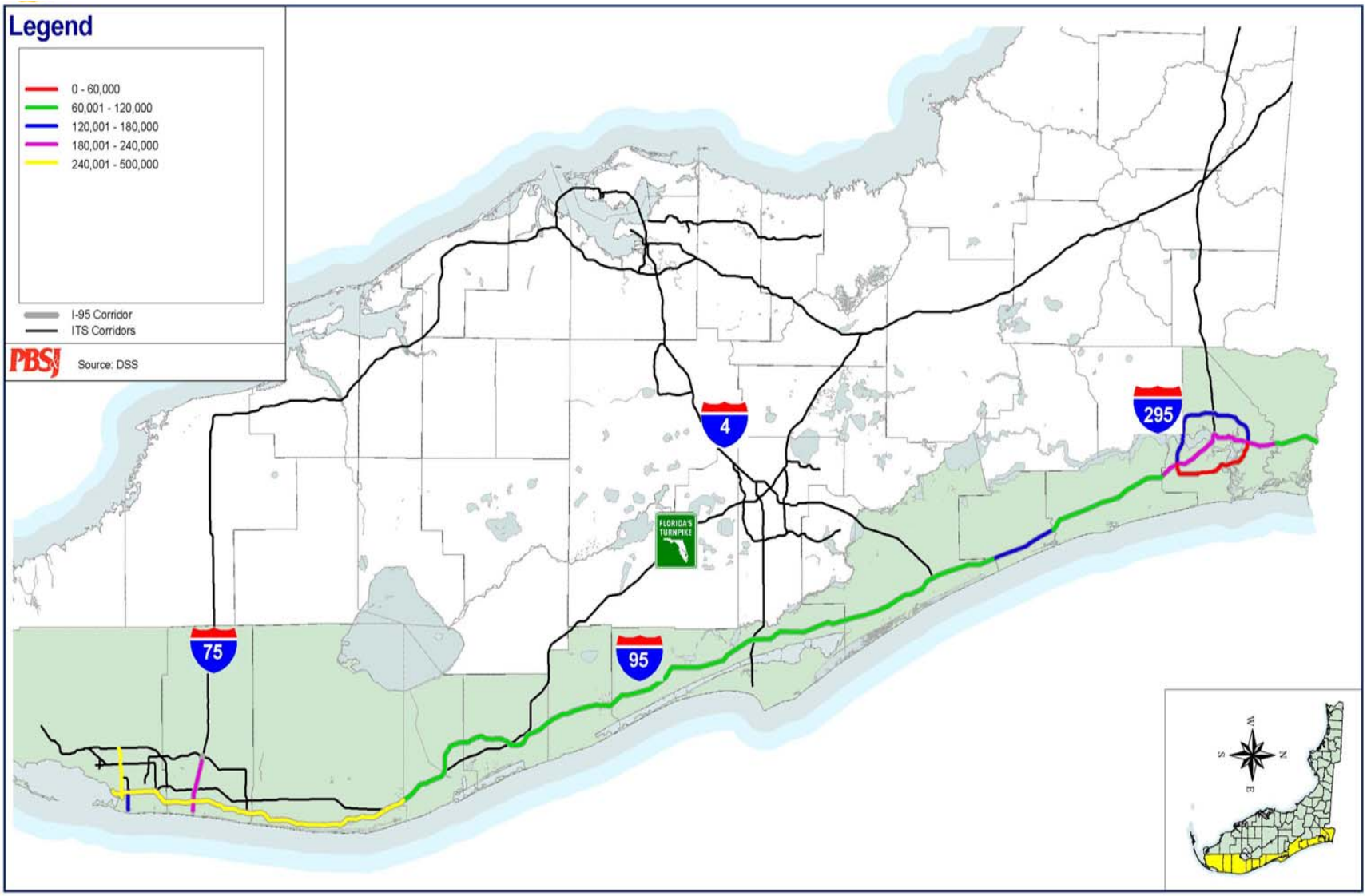


Figure 2.6 – I-95 Corridor – 2020 AADT



- Tourism is Florida's largest industry. Due to the high volume of annual tourists, the state transportation system must be designed to accommodate the social and recreational travel generated by major tourist attractions and activity centers, in addition to supporting the daily commuter and freight travel. Therefore, by locating the state's major activity centers, special generators, and tourist attractions, ITS solutions such as real-time traveler information systems and incident management techniques can be implemented in coordination with multi-modal improvements to improve mobility to and around these major activity centers.

2.1 Current ITS Plans and Programs

This section identifies existing and planned ITS along the I-95 corridor. These services will be mapped in Section 4 of this report to determine gaps in existing and planned services.

- Motorist Aid Call – A statewide motorist aid system using roadside call boxes has been deployed along the entire length of I-95 at one-mile intervals. The call boxes are a partnership between FDOT and the Florida Highway Patrol (FHP). Each FDOT district maintains the call boxes, acknowledges calls for assistance, and redirects calls to the FHP. FHP dispatches service vehicles to aid the motorists. The system utilizes a microwave communications backbone operated and maintained by FDOT.

- Road Rangers (RR) Service Patrols – This ITS service, operated by the FDOT districts through private contractors, includes roadside assistance and incident clearance. RR Service Patrols are currently operating along the study interstate facilities primarily in the large urbanized area of Jacksonville.

- Commercial Vehicle Operations (CVO) – A weigh-in-motion (WIM) site is currently located along I-95 in Jackson County.

- District 2 has begun a comprehensive program of implementing an incident management program along I-95 in the Jacksonville area. This system currently exists along I-95 from I-295 to I-95 and will eventually encompass the entire interstate network as the fiber optic network (FON) is expanded.

Figures 2.7, 2.8, and 2.9 show the existing, programmed, and planned ITS coverage for I-95.

Figure 2.7 – I-95 Corridor Existing ITS Coverage

Figure 2.8 – I-95 Corridor Programmed ITS Coverage

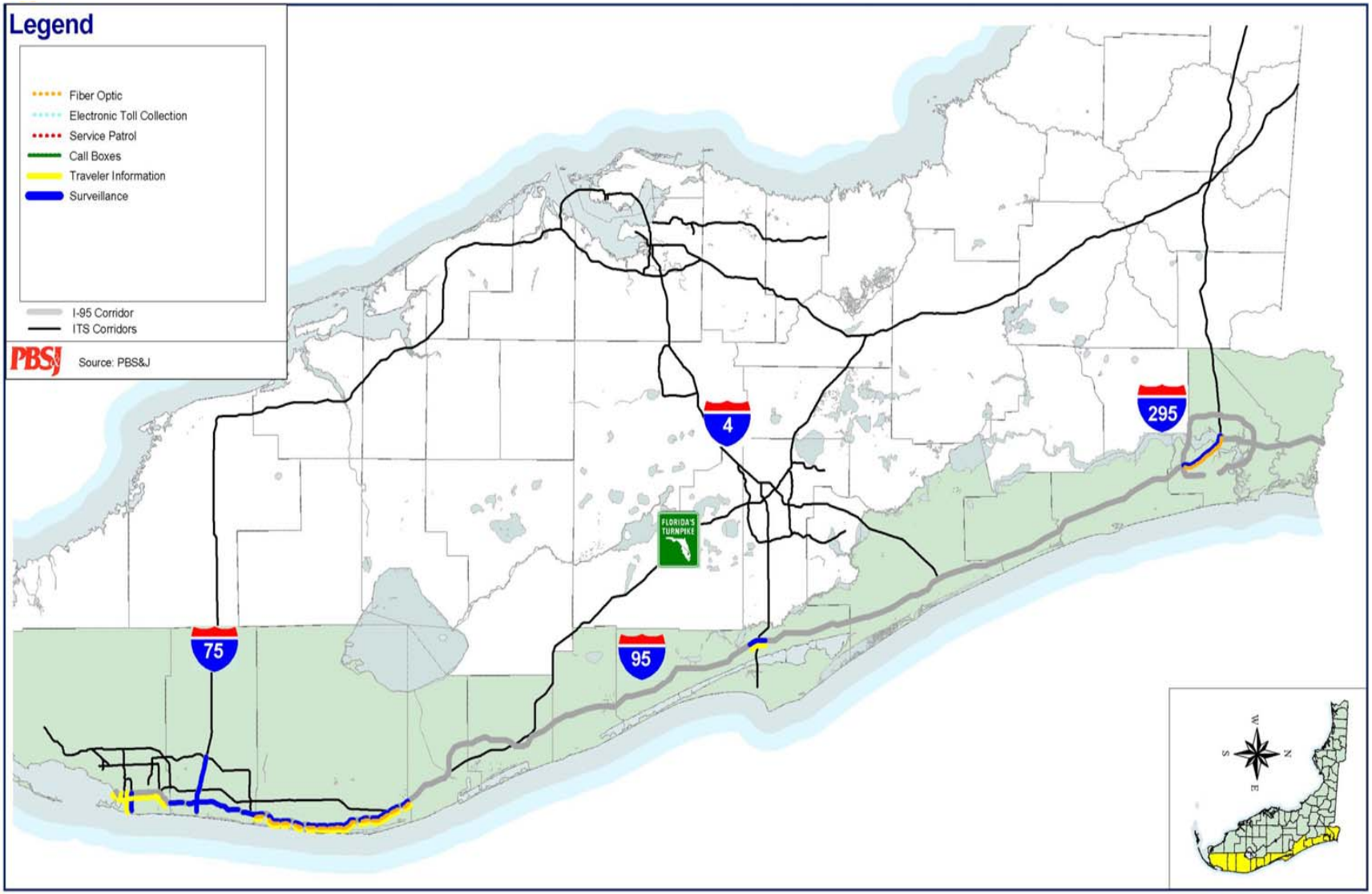
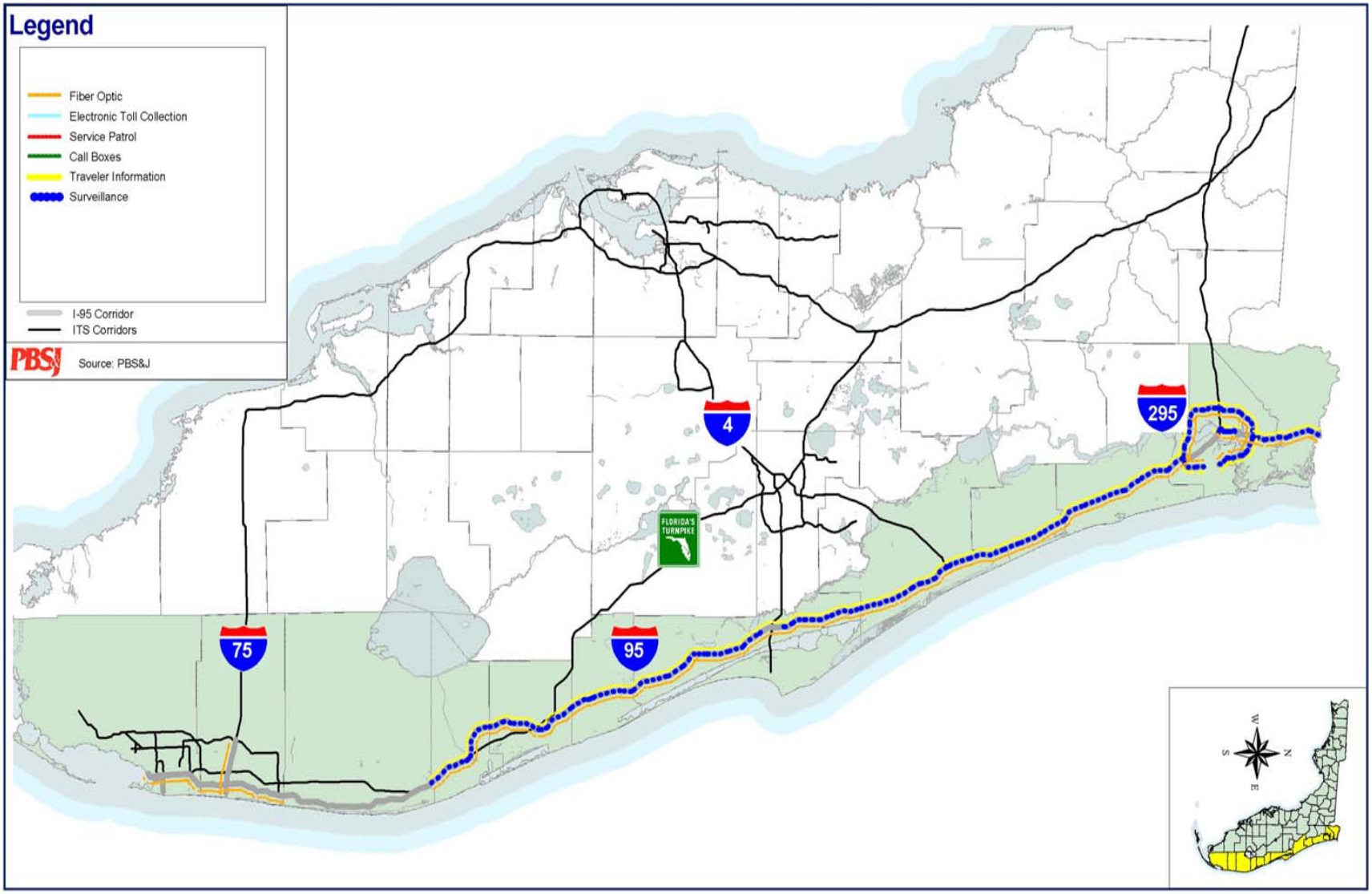


Figure 2.9 – I-95 Corridor Planned ITS Coverage



2.2 Existing Communications Infrastructure

Currently, the only data communications system available along the I-95 corridor is a microwave system. Due to the complexity and volume of the data required to support proposed ITS deployments, the existing microwave communications system will require upgrades. Plans to implement a FON along the FIHS corridors are currently under development. This communications network would be optimal for the communications needs for statewide ITS deployments.

Additionally, several municipalities along the corridor have small segments of fiber with planned interconnection to the intrastate fiber network. The City of Tallahassee has provided fiber optic connections terminating at I-95 for future connection to their advanced traffic management system (ATMS).

Figure 2.10 illustrates the microwave tower locations and Figure 2.11 illustrates existing fiber locations for I-95.

2.3 Proposed Capacity Improvement Projects

It is important to identify programmed and cost-feasible plan improvements (construction only) because funding for potential ITS deployments can be leveraged with the funding of the capacity improvements and consideration of the roadway modifications can be included in the design of the ITS improvements. Figures 2.12 through 2.14 illustrate the programmed, planned, and 2025 cost-feasible improvements for the I-95 corridor in FDOT Districts 2, 5, 4, and 6. The statewide ten-year plan for FIHS facilities did not contain any projects for the I-95 corridor. As identified in Figure 2.12, the I-95 corridor has only a few interchange modification projects identified as programmed.

Figure 2.10 – I-95 Corridor Microwave Communications Infrastructure

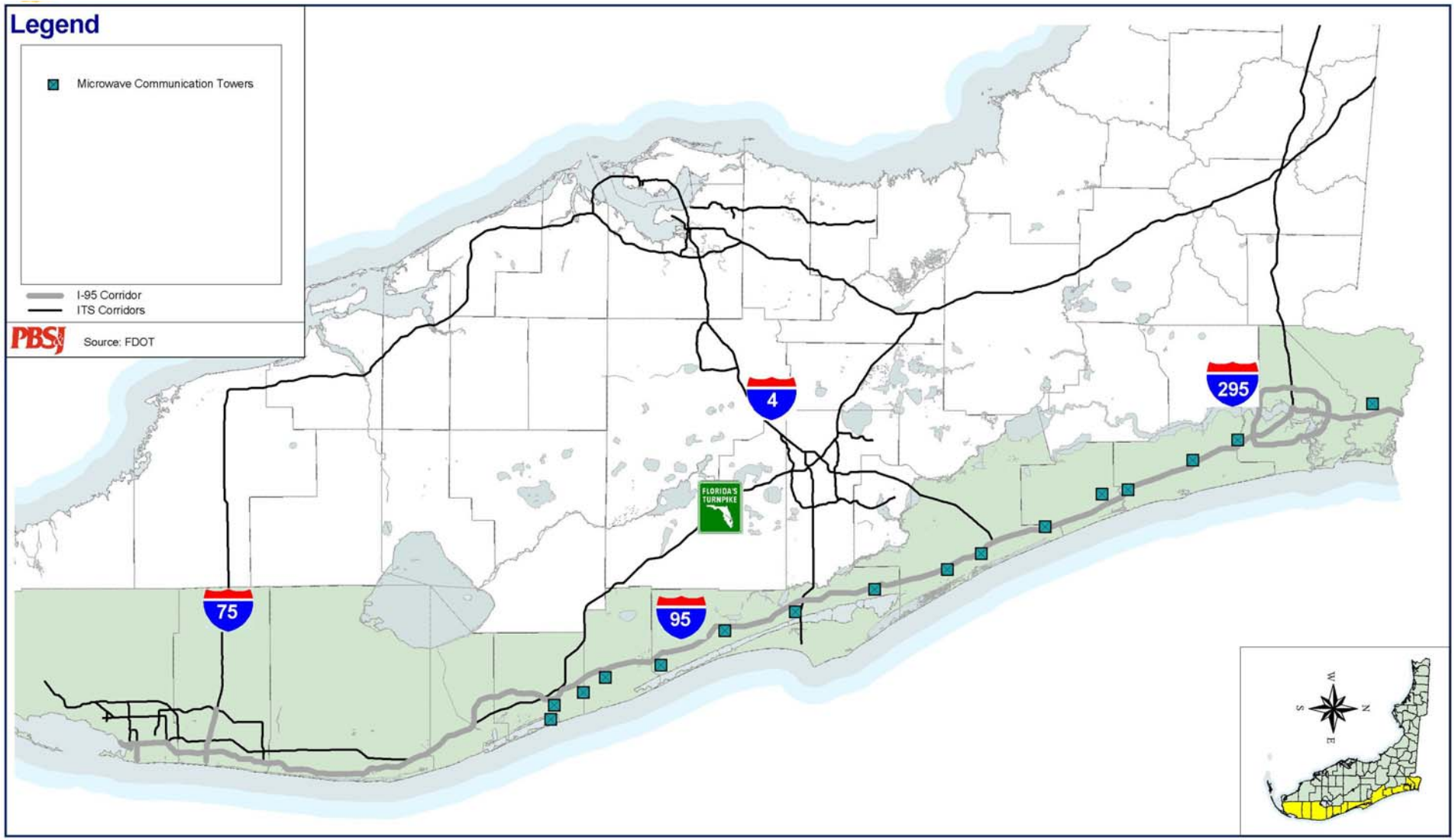


Figure 2.11 – I-95 Corridor Existing Fiber Optic Cable

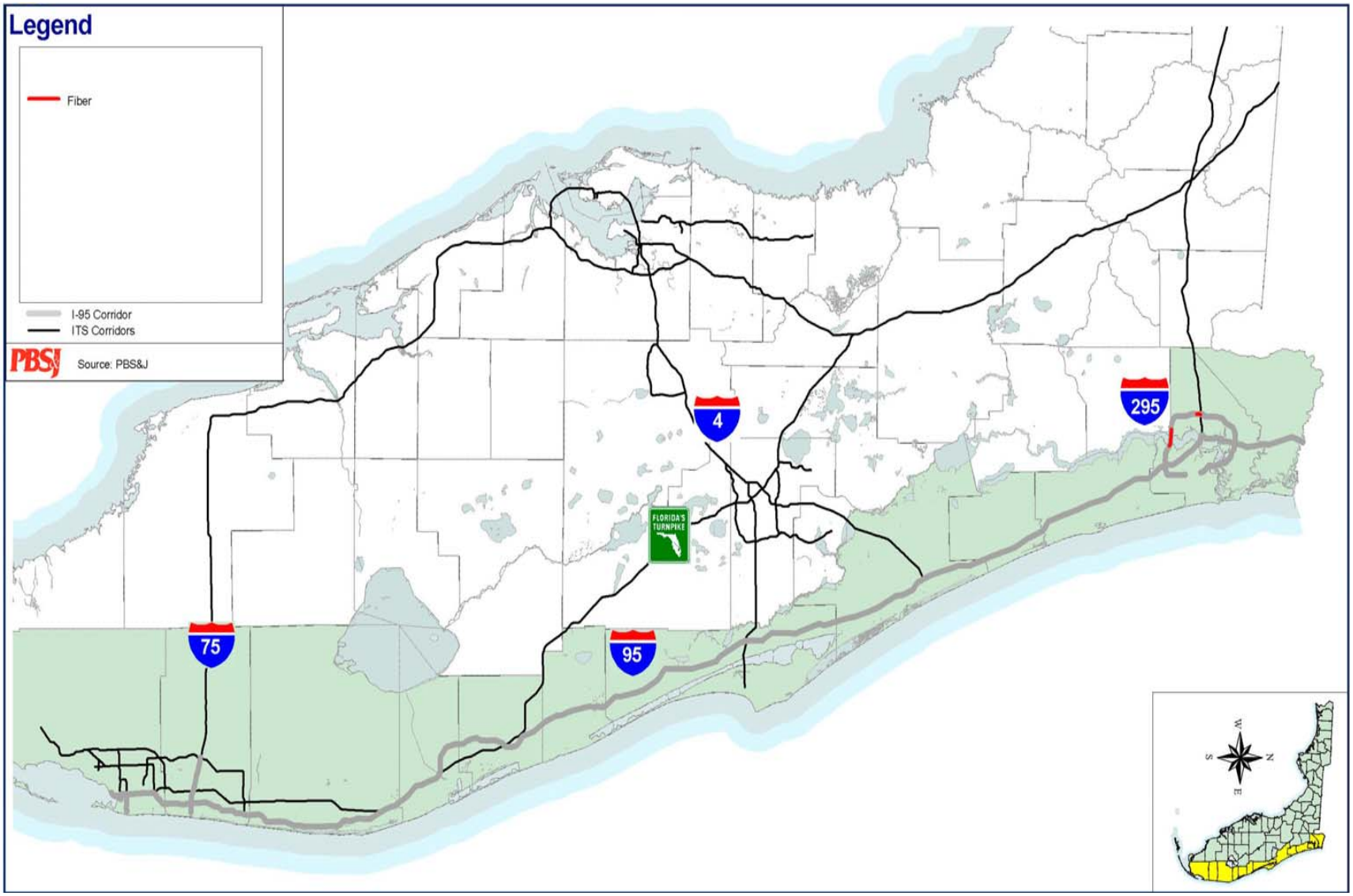


Figure 2.12 – I-95 Corridor Programmed Capacity Improvements

Figure 2.13 – I-95 Corridor Planned Capacity Improvements

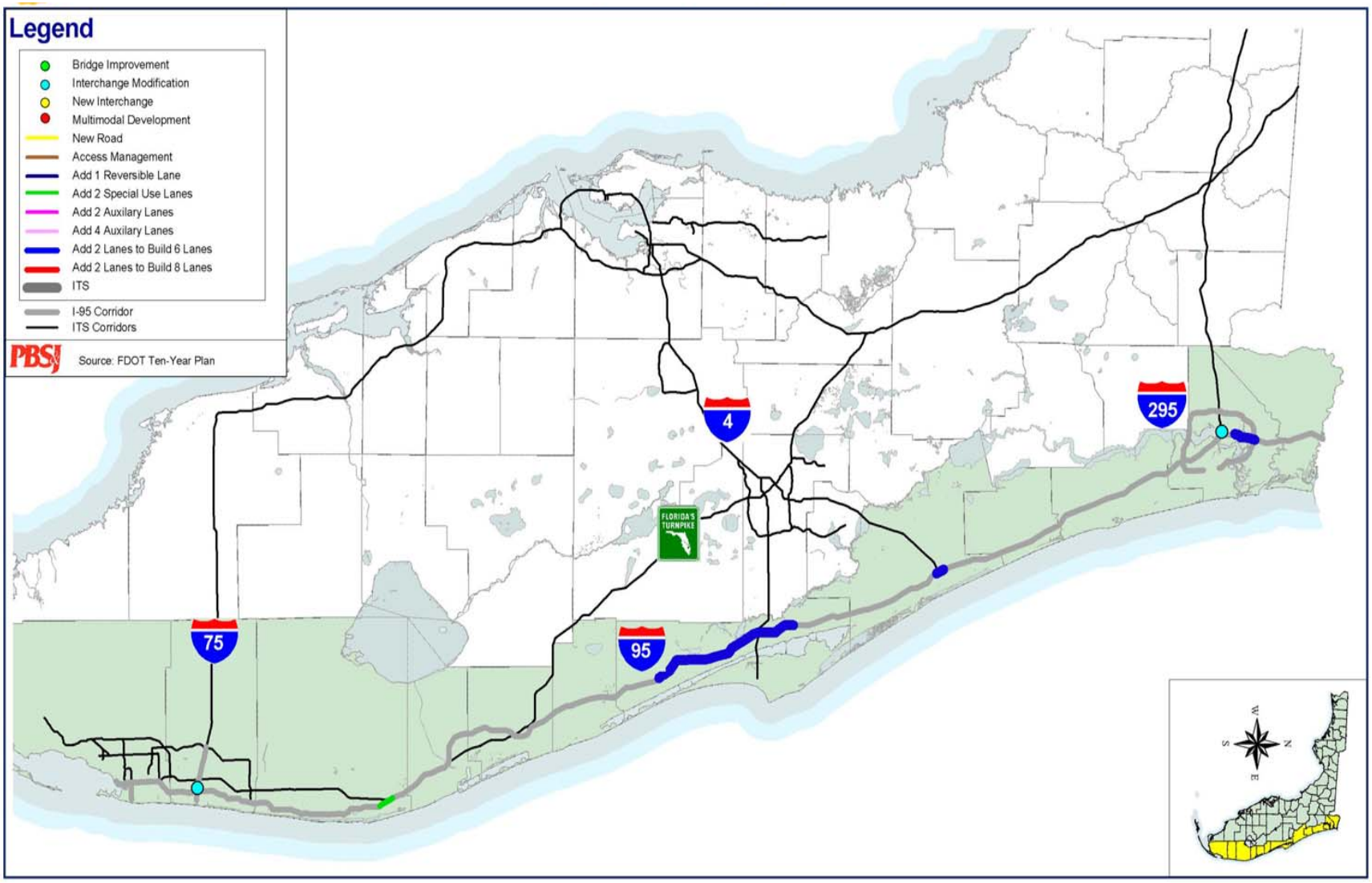


Figure 2.14 – I-95 Corridor 2025 Cost-Feasible Plan Improvements

3. Need for ITS and Proposed Deployment Concepts

3.1 Needs, Issues, Problems, and Objectives

The following needs, issues, problems, and objectives were identified for ITS deployments in Florida along the principal FIHS limited-access corridors. The needs, issues, problems, and objectives were organized based on FDOT's mission statement as follows:

> Florida will provide and manage a safe transportation system that ensures the mobility of people and goods, while enhancing economic competitiveness and the quality of our environment and communities.

From this mission, FDOT derived four primary goals to carry out the mission. Associated with each goal are a number of objectives for implementation.

3.1.1 Safe Transportation – Moving People and Goods Safely

- In 1999, 2,290 people died on Florida's highways resulting in a fatal accident rate (2.1 per million vehicle-miles) higher than the national average (1.5 per million vehicle-miles). Less than one percent of these crashes were due to road-related conditions. Strategies are needed to provide a safer driving environment and to improve vehicular safety to reduce the potential for driver errors and severe accidents.

- FDOT's *FIHS Cost-Feasible Plan* will be implemented as proposed, resulting in significant capacity improvement projects, interchange modifications, and related programs on a statewide basis along each of the major corridors. These programs will result in a significant number of construction work zones along these major corridors.

- Providing safe work zones and maintaining traffic along these high-traffic volumes is a priority needed to support FDOT's mission to provide "safe" transportation services.

- The safety of commercial vehicle operators is dependent on reliable and predictable traffic flows at interchanges, weigh and inspection stations, and gates for intermodal facilities – such as rail, port, and airport cargo facilities. The formation of queues on these corridors is a safety concern for the commercial vehicle operators and other vehicles.

- Commercial vehicle operators seek safe environments at our rest and weigh stations where vehicles can be parked overnight to satisfy rest requirements of the Interstate Commerce Commission (ICC).

- Innovative technologies are needed to enhance the coverage and accuracy of inspection and enforcement of commercial vehicle safety requirements.

- Florida has the greatest risk of landfall of hurricanes in the nation requiring residents and visitors to respond quickly to events requiring evacuation. Based on the average since 1900, a named storm is anticipated to land in Florida once per year and a storm that requires a major evacuation is likely once every three years. Services are needed that can:

    - Support pre-planning for evacuations;
    - Manage traffic during evacuation scenarios;
    - Manage demand through communication with shelters and other safe harbors;
    - Provide route guidance information and information on traffic/travel conditions and weather including winds, rainfalls, and storm surge;
    - Support remote configuration management of highways during evacuation conditions or other emergencies;
    - Provide accurate and timely traveler information regarding incidents on evacuation routes;
    - Share emergency information among local and regional traffic management centers (TMCs) and emergency management facilities; and
    - Detect, verify, respond to, and clear incidents and manage traffic around accidents, emergencies, and other incidents.

- A number of other weather and natural events affect traffic and transportation including flooding, fog, tornados, wildfires, and heavy rainfalls where unsafe driving conditions may exist or diversions of major corridors are required. Surveillance and information of when these unsafe conditions exist are needed to improve driving conditions and manage traffic.

- Improve and expand our ability to identify motorists in need and verify and respond to their needs in an efficient and cost-effective manner.

- Reduce the risk of accidents and other incidents by warning drivers of approaching congestion, inclement weather, steep downgrades, sharp curves, and other hazardous conditions.

3.1.2 System Management – Preservation and Management of Florida's Transportation System

- Four of Florida's metropolitan areas are severely congested and rank among the nation's fifty most congested areas: Miami, Orlando, Tampa, and Jacksonville. (Source: 2000 Urban Mobility Study, Texas Transportation Institute.) In Florida's seven largest urbanized counties (those with 500,000 or more in population including Miami-Dade, Broward, Palm Beach, Pinellas, Hillsborough, Orange, and Duval), the amount of traffic that is congested along these corridors doubled from 1990 to 1999. (Source: Florida's

Mobility Performance Measures Program.) In order to manage the efficiency of the transportation system, the following objectives are needed:

- Improve travel times along the corridors;
- Improve predictability and reliability of travel times;
- Reduce accidents and other incidents during normal flows that result from congestion and delays that result from "rubber-necking" during incidents;
- Reduce congestion-related delays by reducing queues and spillback from other facilities;
- Reduce delays caused by congestion in construction work zones;
- Manage traffic accessing these major corridors at interchanges to improve through-put and traffic flow;
- Reduce unnecessary delays at tolls booths; and
- Reduce unnecessary delays at the gates of intermodal facilities.

- In addition to managing traffic flows, additional alternatives are needed to enable coordinated regional transportation operations by sharing information among regional traffic operations centers and agencies to maximize efficiency of the system and demand between modes. Information to support and promote transit and other multi-modal usage and manage transit vehicles or fleets has the potential to reduce congestion on highways and increase mobility.

- Commercial vehicles present a considerable load on our roadway infrastructure and proper enforcement is needed to eliminate illegally over-weight vehicles that cause damage to pavement and bridges.

- Improve our abilities to detect, verify, respond to, and clear incidents to minimize the impacts on traffic flow.

- Improve traveler information to better manage traffic and inform travelers of delays and breakdowns in our largest metropolitan areas, even when no alternative can be offered to divert or re-route travelers to other modes or roadways exist. Traveler information services are valuable communications tools that can help us manage our system more efficiently by modifying driver behavior and increasing awareness of traffic conditions.

- Technologies are needed to support the operations and management of alternate highway configurations such as special-use lanes (SULs) that serve high occupancy vehicles (HOV), operate as express toll lanes, provide preferences to commercial vehicles or transit vehicles, open road tolling, and other alternative configurations and management plans to promote the efficiency and effectiveness of our infrastructure.

- During the course of ITS corridor and program deployments nationally and in Florida, there is an increasing need for data and information sharing to better manage and operate the system by:

- Supporting system evaluation and alternative analysis of future ITS deployments to ensure we are deploying resources efficiently and effectively;
- Supporting and supplementing other data collection programs such as the 200-highest hour report, highway performance monitoring system (HPMS), and design traffic factors for geometric and pavement design;
- Supporting highway operational performance reporting, modeling simulation, and other techniques for the operations and management of the system; and
- Providing before and after studies for ITS deployments. Many current programs are unable to assess their benefits or effectiveness because no data was collected on conditions and performance prior to installation of ITS

3.1.3 Economic Competitiveness – A Transportation System that Enhances Florida's Economic Competitiveness

- Commercial vehicles form the backbone of the state's freight transportation network. All aspects of the economy rely on commercial vehicles to meet their transportation needs. The trucking industry is an active participant in all of Florida's economy. Motor carriers haul 77 percent of all shipments originating in Florida (by weight), have a combined value of $154 billion, and provide the landside link to all of our intermodal facilities. The following objectives are needed to support Florida's economic competitiveness:

  - Ensure efficient landside access to intermodal, port, airport, and truck terminal facilities;
  - Ensure efficient intermodal transfer of people and goods;
  - Promote safe and efficient access of vehicles to markets; and
  - Expedite permitting and clearance of commercial vehicles at weigh and agricultural inspection sites to keep commerce moving.

- Tourism is one of Florida's top industries and providing a safe, efficient, and easily navigable transportation network to support more than 60 million visitors each year is essential to Florida's long-term economic prosperity. The following objectives are needed to support Florida's economic competitiveness:

  - Ensure efficient access to major activity centers such as tourist attractions, state parks, and other areas of interest; and
  - Provide safe and efficient tourist travel and reduce vehicle-miles traveled (VMT) through the provision of accurate and timely traveler information.

- FDOT, along with its partners, is currently considering the designation of the strategic intermodal system (SIS). Each of the five principal transportation corridors will likely be part of this SIS because of their roles in regional, statewide, and national transportation linkages.

3.1.4 Quality of Life – Increasing Mobility Options for a More Livable Florida

- To ensure we provide more livable communities in Florida, the planning and design of transportation systems should support communities' visions and be compatible with corridors of statewide and regional significance. To support this objective:

    - Provide efficient statewide ITS services with autonomy for decision-making to support local needs and regional cooperation to promote efficiency and regional and statewide goals;
    - Improve interoperability of ITS services through the development of statewide uniform device standards and specifications;
    - Support integration of ITS into local planning processes, programs, and capacity projects;
    - Provide name recognition of key ITS-related services through branding that will instill trust and confidence in traveler information services, roadside assistance, electronic payment services, and other strategic services;
    - Provide easy access and central data warehousing capabilities for transportation planning and design for all partners to support decision-making; and
    - Provide accurate real-time data to technology, business, and operational users for effective and responsive transportation operations.

- Improve the quality of the environment by reducing air quality impacts of mobile source emissions through a more efficient and reliable transportation system.

- Reduce impacts of hazardous materials' (HAZMAT) incidents by providing response systems that provide first responders with access to information on the content of vehicles and vehicle locations so they can quickly respond and clear areas.

- Improve the availability of weather, traveler, and shelter information during natural and man-made disasters.

- Provide safe and efficient travel routes for freight carriers to reduce potential HAZMAT incidents in densely populated areas.

3.2 Mission and Vision

The ITS mission and vision statements were developed for the *ITS Corridor Master Plans* and *ITS Program Plan* to assist in defining the ultimate twenty-year ITS for the interstate corridors and to guide the selection of appropriate solutions to fulfill the ultimate ITS vision.

3.2.1 Mission

Provide effective ITS services for the principal FIHS corridors that enhance the safety and mobility of people and goods, economic competitiveness, and the quality of our environment and communities.

3.2.2 Vision

Two decades into the 21st century, travelers and shippers of goods along Florida's five principal transportation corridors are benefiting from infrastructure, and information and communications technologies that improve the safety, mobility, economic competitiveness, and livability of communities in Florida. Information is available that assists travelers and shippers in route planning, predicting travel times, and scheduling their trips/shipments to reduce delays and arrive at scheduled times. When congestion is severe along specific facilities, alternate routes and modes of travel will be suggested that may be more reliable or cost-effective. During their trip, information of travel conditions is provided in real-time so that scheduling and diversions can be planned if needed as a result of an incident. If an incident occurs, automated information technologies are capable of verifying the location and assessing the appropriate response to incidents. If necessary, emergency personnel or roadside assistance is dispatched, arriving in a short period of time. Traffic flow is restored quickly and delays minimized.

During normal operations, traffic flow is managed within the corridor to keep traffic moving, information on weather conditions is provided to an in-vehicle information service that alerts the driver when visibilities are compromised and advises a safe travel speed. If a natural disaster is impending, information is provided on appropriate local shelter locations, routes for travelers choosing to drive to another area, and other modes of travel that are available instead of driving.

The economy is thriving as a result of world-class access to international markets at ports, airports, and railheads from our agricultural, mining, and manufacturing industries and efficient deliveries of goods and services at the local level. Decisions on the operations, management, and future improvements to the corridors are made through a number of key partners. These decisions are based on measured benefits and a record of the performance of various technologies and elements are customized for communities to reflect their unique values and priorities. However, similar services are available statewide and on related arterial systems and are easily recognized by elderly drivers or visitors since strong name recognition exists for traveler information, roadside assistance, electronic tolls, and other essential services. FDOT is viewed as an ITS powerhouse and a model for how to cost-effectively deploy ITS services and partner with other public agencies and the private sector to create win-win agreements for the benefit of the citizens of Florida.

3.3 Themes, Strategies, and Market Packages for Implementation

Based on these goals and objectives, the following themes and strategies summarize the desired outcomes of the ITS deployments along the principal FIHS limited-access corridors. These themes and strategies are intended to describe the desired outcomes in non-technical terms that stakeholders can understand and may not follow strict technical definitions.

The market packages selected for the *ITS Corridor Master Plans* are identified in Table 3.1. These market packages were obtained from *NITSA* in addition to new market packages created for the Evacuation Coordination and MCO User Services. Those ITS solutions determined not to be applicable are labeled as "N/A".

Table 3.1 – Recommended Market Packages for the *ITS Corridor Master Plans* from the *NITSA, Version 3.0*

MP NO.	Market Package Name	Applicable
Advanced Public Transportation Systems (APTS)		
APTS1	Transit Vehicle Tracking	✓
APTS2	Transit Fixed-Route Operations	✓
APTS3	Demand Response Time Operations	N/A
APTS4	Transit Passenger and Fare Management	✓
APTS5	Transit Security	✓
APTS6	Transit Maintenance	N/A
APTS7	Multi-Modal Coordination	✓
APTS8	Transit Traveler Information	✓
Advanced Traveler Information Systems (ATIS)		
ATIS1	Broadcast Traveler Information	✓
ATIS2	Interactive Traveler Information	✓
ATIS3	Autonomous Route Guidance (ARG)	✓
ATIS4	Dynamic Route Guidance (DRG)	✓
ATIS5	ISP-Based Route Guidance	✓
ATIS6	Integrated Transportation Management/Route Guidance	✓
ATIS7	Yellow Pages and Reservations	✓
ATIS8	Dynamic Ridesharing	✓
ATIS9	In-Vehicle Signing	✓
Advanced Traffic Management Systems (ATMS)		
ATMS01	Network Surveillance	✓
ATMS02	Probe Surveillance	✓
ATMS03	Surface Street Control	N/A
ATMS04	Freeway Control	✓
ATMS05	HOV Lane Management	✓`
ATMS06	Traffic Information Dissemination	✓
ATMS07	Regional Traffic Control	✓
ATMS08	Incident Management System (IMS)	✓
ATMS09	Traffic Forecast and Demand Management	✓
ATMS10	Electronic Fare Collection	✓
ATMS11	Emissions Monitoring and Management	N/A
ATMS12	Virtual TMC and Smart Probe Data	✓
ATMS13	Standard Railroad Grade Crossing	✓
ATMS14	Advanced Railroad Grade Crossing	✓
ATMS15	Railroad Operations Coordination	✓
ATMS16	Parking Facility Management	✓
ATMS17	Reversible Lane Management	✓
ATMS18	Road Weather Information System (RWIS)	✓
ATMS19	Regional Parking Management	N/A
FL ATMS20	Speed Management	✓

Table 3.1 (Continued)

MP NO.	Market Package Name	Applicable
Advanced Vehicle Safety Systems (AVSS)		
AVSS01	Vehicle Safety Monitoring	N/A
AVSS02	Driver Safety Monitoring	N/A
AVSS03	Longitudinal Safety Warning	N/A
AVSS04	Lateral Safety Warning	✓
AVSS05	Intersection Safety Warning	N/A
AVSS06	Pre-Crash Restraint Deployment	N/A
AVSS07	Driver Visibility Improvement	✓
AVSS08	Advanced Vehicle Longitudinal Control	N/A
AVSS09	Advanced Vehicle Lateral Control	✓
AVSS10	Intersection Collision Avoidance	N/A
AVSS11	Automated Highway System (AHS)	✓
Commercial Vehicle Operations (CVO)		
CVO01	Fleet Administration	✓
CVO02	Freight Administration	✓
CVO03	Electronic Clearance	✓
CVO04	Commercial Vehicle Administrative Process	✓
CVO05	International Border Electronic Clearance	✓
CVO06	Weigh-in-Motion (WIM)	✓
CVO07	Roadside CVO Safety	✓
CVO08	On-Board CVO Safety	✓
CVO09	CVO Fleet Maintenance	✓
CVO10	HAZMAT Management	✓
Emergency Management		
EM1	Emergency Response	✓
EM2	Emergency Routing	✓
EM3	Mayday Support	✓
FL EM4	Evacuation Management	✓
Archived Data and Management		
AD1	ITS Data Mart	✓
AD2	ITS Data Warehouse	✓
AD3	ITS Virtual Data Warehouse	✓
Maintenance and Construction Operations (MCO)		
FL MCO1	Maintenance and Construction Management	✓

3.3.1 Coordinated Operations

- Facilitate, support, and enhance the coordination and implementation of interagency efforts in response to the needs of intercity travel, major incidents or special events of regional significance along the corridor, and the security of the transportation infrastructure.

- Promote coordination and cooperation among all organizations involved in incident management including state, county, and local transportation departments, toll road authorities, law enforcement agencies, emergency service providers, and other operating agencies within the corridor.

- Foster and facilitate continued development and implementation of regional incident management initiatives and educate the public and responders to the benefits of incident management.

- Encourage technology and resource sharing by coordinating the development of training programs to support member agencies' incident management programs and activities.

- Demonstrate and evaluate the application of innovative procedures and technologies to enhance incident management activities.

- Provide regional solutions for serving intercity travel by promoting the through movement of vehicles.

- Provide procedures and coordination during evacuation and other emergency situations to make the best use of system resources.

- Promote coordination among agencies in the notification and implementation of maintenance and construction.

3.3.2 Active Facilities Management

- Support traffic management along all facilities in a coordinated way.

- Support incident management for the detection of, response to, and clearance of accidents and other major incidents such as freeway service patrols and Mayday/E-911 support, development of incident response scenarios and traffic diversion plans, incident response centers or command posts, and traffic surveillance technologies.

- Provide transit management, including bus, commuter rail, and park-and-ride facilities, as well as other transit-related activities and manage SULs, such as high-occupancy toll or other value pricing, reversible lane control for high occupancy vehicle (HOV) facilities, and transit or emergency vehicle signal preemption systems.

- Improve the ability to monitor, schedule, and dispatch maintenance, construction, special services, or other public/community transportation fleets.

- Manage traffic flow and safety during evacuations related to hurricanes, fires, and other emergencies.

- Serve commercial vehicle operations (CVO), such as electronic screening systems, to verify the compliance of motor carriers with size, weight, safety and credentials regulations, and emergency response systems.

- Promote the use of electronic toll collection (ETC) and electronic payment systems (EPS) to improve traffic flow efficiencies and reduce infrastructure requirements.

- Implement procedures and systems that cost-effectively manage work zone activities.

- Manage lane closure prediction and scheduling.

- Collect/Maintain data on work zone locations and delay and alternate routing for mainlines and standard diversion or evacuation routes.

- Automate speed enforcement and variable speed limits in work zones.

- Support advanced traveler information systems (ATIS).

- Provide evacuation guidance that includes basic information to assist potential evacuees in determining whether evacuation is necessary. Once the decision is made to evacuate, the services will also assist evacuees in determining destination routes to shelters and other lodging options. This function will also provide guidance for returning to evacuated areas, information regarding clean up, and other pertinent information to be distributed from federal, state, and local agencies.

- Provide evacuation travel information that will benefit evacuees in planning their evacuation trip once that decision has been made. This function will also allow travelers to change course during the trip based on route and destination conditions.

- Provide evacuation traffic management to assist evacuation coordination personnel in the management of evacuation operations on the transportation network.

- Provide evacuation planning to support the evacuation process by providing information, current and historical, to emergency management planning personnel.

- Promote evacuation resource sharing to allow information and resource sharing between agencies involved in the evacuation including transportation, emergency management, law enforcement and other emergency service agencies.

- Improve the coordination of construction activity and other roadway activities with maintenance.

- Provide infrastructure security against terrorist attacks.

3.3.3 Information Sharing

- Coordinate data collection and information processing, management, and distribution.

- Coordinate data collection programs and sensor installation/operations.

- Inform and exchange data through coordinated operations.

- Centralize information processing, management, and storage.

- Open access to information delivery and use.

- Coordinate information report development.

- Coordinate transportation management strategy development.

A further review of the market packages was necessary to determine those that are feasible for deployment over the near-term. Additionally, the agencies responsible for deployment and the methodology of deployment was also considered prior to developing recommendations to ensure that all projects included in the corridor implementation plan were reasonable, production-ready projects.

The market packages feasible for near-term (ten years) deployment include:

- APTS – fixed-route transit operations, vehicle tracking, routing, and fare payment;
- ATIS – traveler information, 511implementation and route guidance;
- ATMS – incident/freeway management, RWIS, HOV, and reversible lanes;
- CVO – electronic clearance and WIM;
- Emergency Management – evacuation management, Mayday support, and emergency response;
- Archived Data Management – ITS data mart and central data warehousing; and
- MCO.

In reviewing the potential deployment of these market packages, several of the proposed projects could not be recommended as corridor ITS projects, as they are deployed on a statewide, systems-level basis and not on a corridor-by-corridor basis. These market packages include CVO and Archived Data Management. The ITS Central Office will be developing and deploying these ITS services on a statewide basis. Additionally, APTS, MCO, Emergency Response, and Evacuation Management are deployed through other state or local agency programs.

4. Gap Analysis and Other Deployment Issues

4.1 Needs Gap Analysis by Segment and Market Packages

This section provides an analysis of existing, programmed, and planned ITS deployments along the I-95 facilities utilizing work program information and conceptual project information provided by the districts. This analysis evaluates areas of ITS coverage and identifies "gaps" in the system. These gaps represent segments of the facilities that will not be addressed by existing, programmed, or planned ITS projects. Section 5 of this report will recommend ITS projects to fill the gaps to provide a consistent, comprehensive statewide ITS infrastructure.

For the purpose of the analysis, the ITS deployments were categorized into four market package areas. These areas are as follows: Freeway Management Systems (FMS), RR Service Patrols, motorist aid call boxes, and evacuation coordination.

These market packages were selected for implementation to fulfill one of the most important goals identified for statewide ITS services: moving people and goods safely and effectively. FMS complimented by the RR Service Patrols and motorist aid call boxes will assist motorists by providing timely, accurate travel data that will reduce the number of incidents, thus saving time, money, and lives. Additionally, these deployments will assist agencies in better detection, verification, and clearance of incidents.

These deployments will also serve to develop a base infrastructure for statewide ITS deployments on which more complex, data intensive ITS services can be deployed. With the data collection, surveillance, and traveler information devices deployed through the implementation of FMS, future ITS deployments such as ATIS, APTS, and CVO will be more effective and more easily implemented.

The classification of these proposed ITS deployments into market package-related areas will assist in identifying appropriate ITS strategies to address the gaps. Table 4.1 illustrates the location of each FMS and RR Service Patrol gap for the I-95 facility. Motorist aid call boxes are located along the entire length of the facility.

Table 4.1 – Identified ITS Functional Gaps

Facility	Service Area	County	District	From	To
I-95	FMS	St. Johns	2	U.S. 1 at Flagler County Line	I-295 South
I-95	FMS	Nassau	2	Duval/Nassau County Line	Nassau/Georgia State Line
I-95	RR Service Patrols	Martin	4	Palm Beach/Martin County Line	Martin/St. Lucie County Line
I-95	RR Service Patrols	St. Lucie	4	Martin/St. Lucie County Line	St. Lucie/Indian River County Line
I-95	RR Service Patrols	Indian River	4	St. Lucie/Indian River County Line	Indian River/Brevard County Line
I-95	RR Service Patrols	Brevard	5	Indian River/Brevard County Line	Brevard/Volusia County Line
I-95	RR Service Patrols	Volusia	5	Brevard/Volusia County Line	Volusia/Flagler County Line
I-95	RR Service Patrols	Flagler	5	Volusia/Flagler County Line	Flagler/St. Johns County Line
I-95	RR Service Patrols	Nassau	2	Duval/Nassau County Line	Nassau/Georgia St. Line
I-295	RR Service Patrols	Duval	2	I-295 South at I-95	Old St. Augustine Road
I-295	RR Service Patrols	Duval	2	U.S. 17 Interchange	I-295 North at I-95
SR 9A	RR Service Patrols	Duval	2	SR 9A South at I-95	SR 9A North at I-95

Source: PBS&J, 2002

4.2 Deployment Issues

Through the deployment of these existing ITS, a number of critical issues have emerged that should be addressed to achieve successful ITS deployment for future ITS along the FIHS corridors. These issues are covered in greater detail in *Technical Memorandum No. 4.1 – Concept of Operations*; however, a few of the major issues are identified below.

- Incorporating legacy and sunk investments;
- Partnering with local operational management to achieve synergy;
- Promoting efficient operations and management;
- Integrating software to promote statewide coordination and communications;
- Developing statewide standards, specifications, procurement guidelines, and performance measures;
- Balancing the need for local autonomy and control with centralized coordination and cost efficiency;
- Implementing services to provide coordinated operations, active facilities management, and information sharing;
- Supporting the needs of the full range of ITS users including commuters, tourists, commercial vehicles, and evacuees;
- Deploying ITS in a coherent, structured manner that provides a complete backbone of ITS services along the five principal FIHS limited-access corridors at an early stage;
- Developing efficient and rapid deployments based on practical experience and lessons learned throughout Florida and nationally;
- Supporting the effective development and deployment of the communications infrastructure required to support ITS, including the Florida Fiber Network (FFN);
- Supporting continued professional capacity building and training;
- Using ITS to support public safety; and
- Utilizing life-cycle considerations.

5. Conceptual Project Implementation

5.1 Overview

The functional gaps identified in Section 4 were reviewed and developed as recommended conceptual projects for advancement along the I-95, I-295, I-595, and SR 9A corridors. The conceptual projects focused on three main functional areas: FMS, RR Service Patrols, and MACBs. These projects were recommended to better detect, verify, and respond to incidents and non-recurring congestion due to incidents. Table 5.1 identifies the conceptual projects and their locations.

Table 5.1 – I-95 Proposed Conceptual Projects

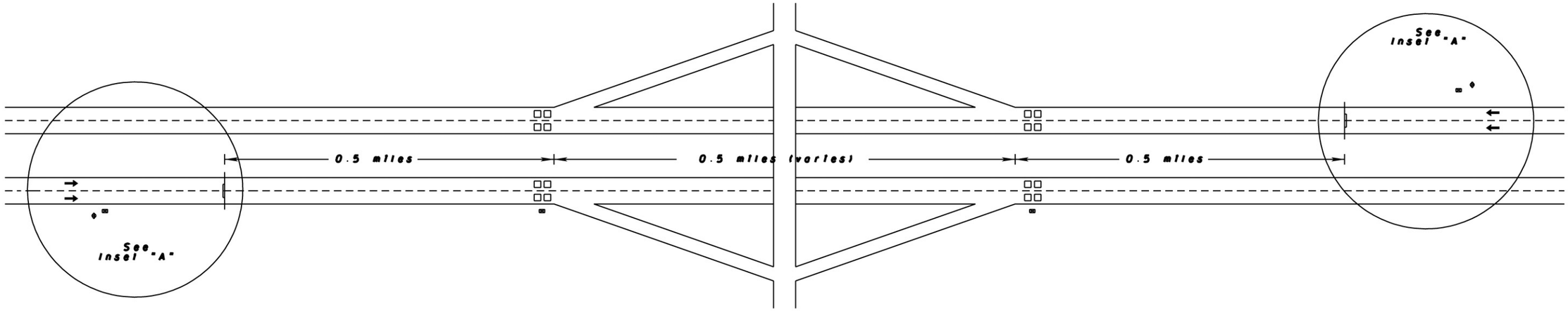
Facility	Service Area	County	District	Area Type	From	To
I-95	FMS	St. Johns	2	R	CR 210 Interchange	
I-95	FMS	St. Johns	2	R	SR 16 Interchange North	SR 16 Interchange South
I-95	FMS	St. Johns	2	R	SR 206 Interchange	
I-95	FMS	St. Johns	2	R	SR 207 Interchange	
I-95	FMS	Nassau	2	R	U.S. 17 Interchange and Visitor Center	
I-95	FMS	Nassau	2	R	SR A1A Interchange	
I-95	RR Service Patrols	Martin	4	R	Palm Beach/Martin County Line	Martin/St. Lucie County Line
I-95	RR Service Patrols	St. Lucie	4	R	Martin/St. Lucie County Line	St. Lucie/Indian River County Line
I-95	RR Service Patrols	Indian River	4	R	St. Lucie/Indian River County Line	Indian River/Brevard County Line
I-95	RR Service Patrols	Brevard	5	R	Indian River/Brevard County Line	Brevard/Volusia County Line
I-95	RR Service Patrols	Volusia	5	R	Brevard/Volusia County Line	Volusia/Flagler County Line
I-95	RR Service Patrols	Flagler	5	R	Volusia/Flagler County Line	Flagler/St. Johns County Line
I-95	RR Service Patrols	Nassau	2	R	Duval/Nassau County Line	Nassau/Georgia State Line
I-295	RR Service Patrols	Duval	2	R	I-295 South at I-95	Old St. Augustine Road
I-295	RR Service Patrols	Duval	2	R	U.S. 17 Interchange	I-295 North at I-95
SR 9A	RR Service Patrols	Duval	2	R	SR 9A South at I-95	SR 9A North at I-95

5.2 Project Toolbox

To determine the cost, benefits, and impacts associated with the proposed ITS projects, the type and location of devices and capital equipment were estimated based on conceptual ITS design standards. For the FMS projects, a standard template or toolbox was developed for both rural and urban ITS deployments. Figures 5.1 and 5.2 present the conceptual design template for both the rural and urban FMS applications. The spacing standards included in the toolbox are derived from the review of existing Florida FMS in comparison with national device spacing standards.

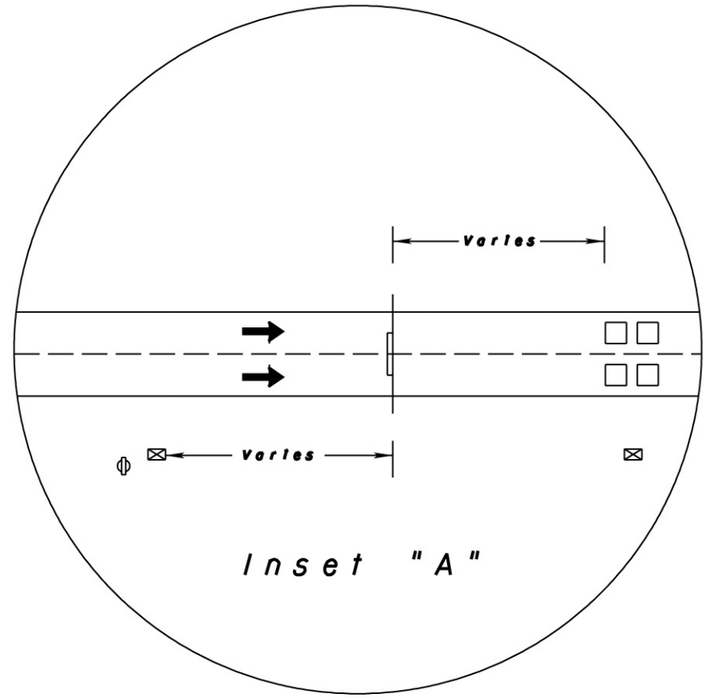
The rural FMS conceptual design illustrates the need for ITS devices primarily at the rural interchanges for incident detection, verification, and clearance. The dynamic message sign (DMS) and closed-circuit television (CCTV) devices are located at the approaches to the rural interchanges and the detection devices are located at all ramps. The urban FMS conceptual design assumes a much higher density of devices due to higher traffic volumes and the complexity of data collection needs. The recommended spacing for the urban FMS is one mile for CCTVs, and a half-mile for detection devices and DMS at the approach to each urban interchange.

These toolbox templates were then applied to the proposed corridor projects to determine the number, type, and location of proposed devices which were used to estimate project costs, benefits and impacts.



Legend

- PTZ CCTV
- DMS and Support
- Direction of Travel
- Cabinet (Typ.)
- Loop Detector



Notes:

1) DMS are spaced at approximately 1.5 miles apart. Actual sign locations must be determined on a site-to-site basis.
2) CCTV cameras will be spaced no farther than 2 miles apart. height of mounting pole and camera zoom capabilities will be determined on a site-to-site basis.
3) Loop Detectors shall be placed no farther than 2 miles apart.
4) The Vehicle Detection Area (VDA) for a rural interchange with no obstructions in the clear zone is approximately 4 miles.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
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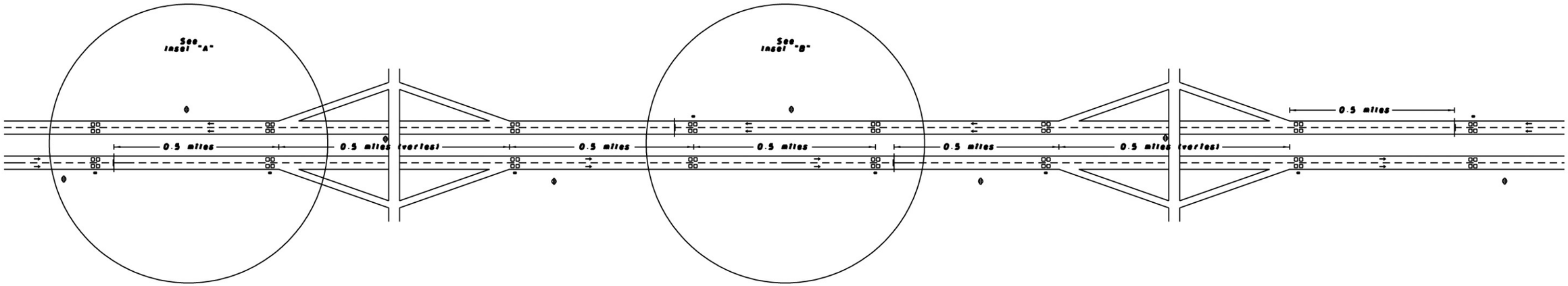
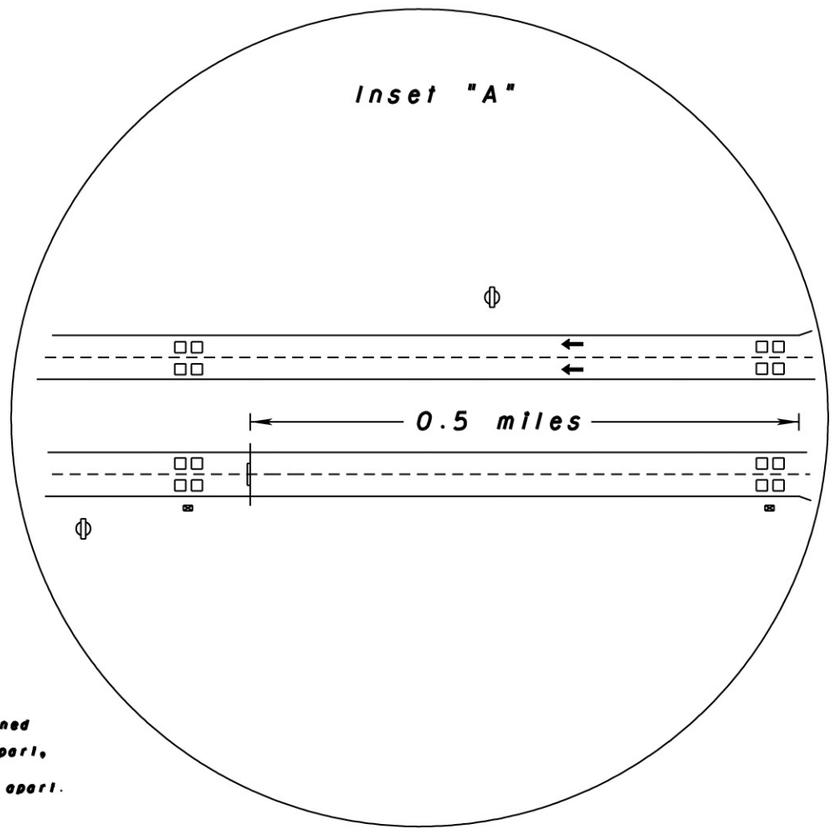
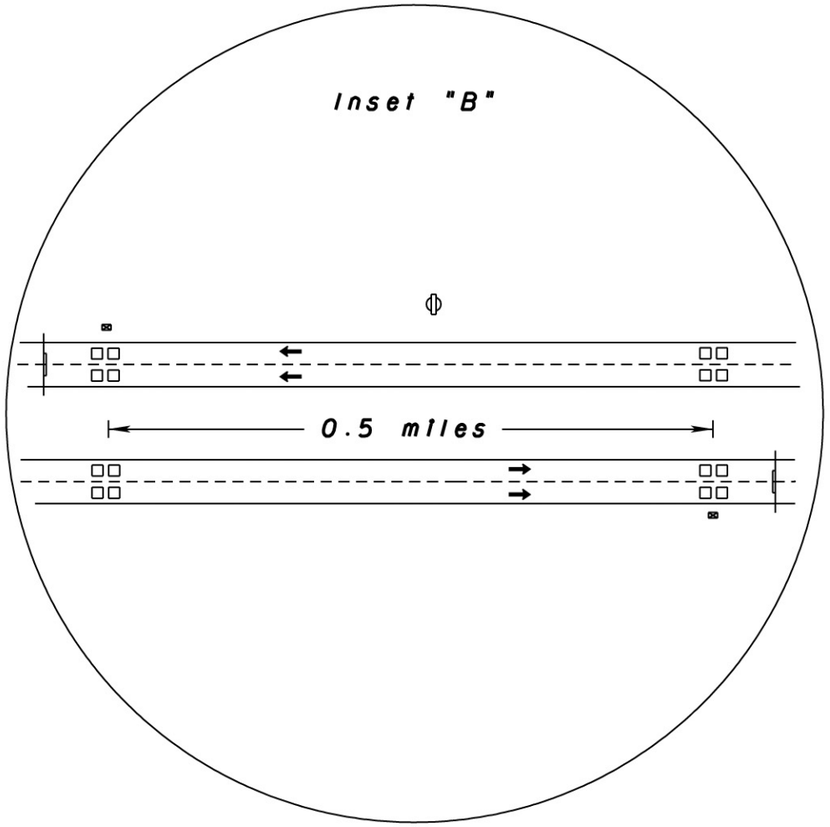
"Typical" Rural Interchange Configuration

Figure 6.1







Legend

- PTZ CCTV
- DMS and Support
- Direction of Travel
- Cabinet (Typ.)
- Loop Detector

Notes:

1) DMS spacings vary. Actual sign locations will be determined on a site-to-site basis.
2) CCTV cameras will be spaced no farther than 0.5 miles apart, height of mounting pole and camera zoom capabilities will be determined on a site-to-site basis.
3) Loop Detectors shall be placed no farther than 0.5 miles apart.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID

"Typical" Urban Interchange Configuration

Figure 6.2

5.3 Conceptual Project Descriptions

CR 210, SR 16, SR 206 and SR 207 Interchanges in St. Johns County – This project will include the deployment of an IMS/FMS at these four interchanges located on rural four lane sections of I-95 in District 2. Each interchange ITS deployment will consist of two CCTV cameras, two DMS, and 16 loop detectors. The total number of devices for this project is eight CCTV cameras, eight DMS, and 64 loop detectors. They have been proposed as new projects to be included with the deployment of the rural freeway IMS because these I-95 interchanges were identified as high accident locations.

U.S. 17 Interchange and SR A1A Interchange in Nassau County – This project will include the deployment of an IMS/FMS at these two interchanges located on rural four lane sections of I-95 in District 2. Each interchange ITS deployment will consist of two CCTV cameras, two DMS, and 16 loop detectors. The total number of devices for this project is four CCTV cameras, four DMS, and 32 loop detectors. They have been proposed as new projects to be included with the deployment of the rural freeway IMS because both interchanges were identified as high accident locations and are also shown as moderate priority segments.

5.4 Rule 940 Integration

As part of the ITS conceptual project implementation process, the Federal Highway Administration (FHWA) has implemented Rule 940 which guides the integration of ITS projects into the planning process. Rule 940 states that all projects receiving federal funding, in whole or in part, must comply with the stipulations outlined in the rule. Since these projects will be integrated into the statewide ITS program for federal and state funding, the proposed conceptual projects recommended as part of this document must comply.

Rule 940 stipulates that in order for a project to advance into the design phase, a systems engineering analysis must be completed and must include, at a minimum:

- Identification of the portions of the regional (corridor) architecture being implemented;
- Identification of participating agencies roles and responsibilities; and
- Procurement options.

The following sections address these topics for future project implementation.

5.4.1 Portions of the Corridor Architecture being Implemented

Each district corridor architecture for I-95 provides a "big picture" or high-level view of ITS in that region. The I-95 corridor architecture consists of both FDOT Districts 2 and 3 I-95 corridor architectures. In order to comply with Rule 940 implementation, each of the proposed projects in Table 5.1 must identify which portions of the national, statewide, and district corridor ITS architectures they are implementing.

Table 5.2 identifies the market packages from the *NITSA* and the statewide and corridor architectures that were implemented by the proposed I-95 corridor projects. The FMS projects implement ATMS market packages. They are as follows: ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, ATMS09, ATMS18, and FL ATMS20. The RR Service Patrol projects implement portions of EM1, EM2, EM3, and FL EM4.

Additionally, the associated corridor architecture data flows and elements by market package are identified for the proposed projects. These architecture elements and data flows are listed in Appendix B.

Each district's corridor architecture for I-95 provides a high-level view of ITS in that region. The I-95 corridor architecture consists of both FDOT Districts 2, 5, 4, and 6 I-95 corridor architectures. An ITS architecture typically defines:

- Functions (e.g., gathering traffic information or requesting route information) that must be performed to implement a given user service or market package;
- Physical entities or subsystems where these functions reside (e.g., roadside or the vehicle);
- Interfaces/Information flows between the physical systems; and
- Communications requirements for the information flows (e.g., wireline or wireless).

In addition, it identifies and specifies the requirements for the standards needed to support national and regional interoperability, as well as product standards needed to support economy of scale considerations in deployment. More information on the development of the corridor architecture is contained in *Technical Memorandum No. 3.4 – ITS Physical Architecture*.

To illustrate the architectural elements, subsystems, and the data flows between subsystems for a particular project, customized market package diagrams were developed. These diagrams have been included in Appendix B. Table 5.2 identifies the market packages from the *NITSA* and the statewide and corridor architectures that were implemented by the proposed I-95 corridor projects. The boxes with the checks are included in the corridor architectures. The FMS projects implement ATMS market packages. They are as follows: ATMS01, ATMS04, ATMS06, ATMS07, ATMS08, ATMS09, ATMS18, and FL ATMS20. The RR Service Patrol projects implement portions of EM1, EM2, EM3, and FL EM4.

Table 5.2 – Architecture Market Packages Implemented by the I-95 Projects

MP NO.	Market Package Name	FMS	RR Service Patrols	Motorist Aid Call Boxes
Advanced Traffic Management Systems (ATMS)				
ATMS01	Network Surveillance	✓		
ATMS04	Freeway Control	✓		
ATMS06	Traffic Information Dissemination	✓		
ATMS07	Regional Traffic Control	✓		
ATMS08	Incident Management System (IMS)	✓		
ATMS09	Traffic Forecast and Demand Management	✓		
ATMS18	Road Weather Information System (RWIS)	✓		
FL ATMS20	Speed Management	✓		
Emergency Management				
EM1	Emergency Response		✓	✓
EM2	Emergency Routing	✓	✓	✓
EM3	Mayday Support		✓	✓
FL EM4	Evacuation Management	✓	✓	

5.4.2 Institutional Agreements

A critical step of ITS project implementation is to identify existing and proposed institutional agreements among agencies or between agencies and private entities addressing ITS services or deployments. The effectiveness of ITS implementations depends on the support and cooperation of many stakeholders, while the efficiency depends on the identification of a clearly defined organization system, lines of communication, responsibilities, and roles. Each stakeholder must have a consensus and understand how they are to participate, where they are needed, what their duties will be, when they will be needed, and who will be responsible. These agreements can be extended over local, regional, and statewide jurisdictions. Depending on the service provided, roles taken by participating stakeholders, familiarity among and between stakeholders, and the internal legal restrictions between each stakeholder organization, agreements could take one of several forms:

- Informal –
  - Verbal;

- Semi-Formal –
  - Memorandum of Understanding (MOU); and
  - Letters of Agreement (LOA); and

- Formal –
  - Recorded Contracts.

As needs, services, stakeholder involvement, and system architectures are refined, issues will become better identified, establishing a basis for the types of agreements to be pursued.

Generally, those agreements will fall into one or more of the following categories:

Jurisdictional Authority Agreements are needed when there is more than one agency providing similar or identical services within the same region and authority has not been clearly established by the Legislature. In these instances, there is a need for the participating agencies to clearly understand who will have authority and responsibility for given situations or circumstances where authority may be invoked and under what conditions that authority may be transferred.

Legal Agreements are needed when there are public agencies procuring services and/or commodities or leasing commodities from private entities.

Resource Allocation / Sharing Agreements are needed when there is more than one agency that will provide similar or identical services within the same region. In this instance, the agreement establishes what resource will be allocated by each of the agencies and how the sharing will take place. Resources could be staff, maintenance vehicles, replacement equipment, or transportation management facilities. Costs and benefits are outlined, and clear lines of communications and responsibility for funding, operations, and maintenance are established.

Funding Agreements are needed when there will be a sharing of planning, design, procurement, operations, and maintenance services among public agencies and even public/private ventures. Funding areas that will most likely be the subject of interagency agreements are as follows:

- Non-Recurring Costs –
  - Planning;
  - Design;
  - Construction;
  - Property; and

- Recurring Costs –
  - Utilities;
  - Power;
  - Communications; and
  - Software / Hardware enhancements, upgrades, and expansions.

Communications / Coordination Agreements are needed when there are agencies or public/private ventures sharing responsibility for operating and maintaining services and systems.

Planning Agreements are needed when there is more than one agency with an interest in the development of a service or services in the same region. These agreements will typically address funding, responsibility, scheduling and milestones, stakeholder review, and areas of special interest.

Design Agreements are needed when more than one agency is pursuing the development of a service or services in the same region. These agreements will typically address funding, responsibility, scheduling and milestones, stakeholder review, and areas of special interest.

Procurement Agreements are needed when there is more than one agency involved in providing similar or identical services within the same region that require similar or identical private services and equipment. In this instance, the agreement establishes what resource will be procured by each of the agencies, how the funding will take place, how upgrades, enhancements, warranties or replacements will be handled, and who will be responsible for operations and maintenance. Funding areas that will most likely be the subject of interagency agreements are as follows:

- Field Equipment;

- Physical Plant Facility –
  - Building;
  - Property;
  - Security;
  - Furnishings; and
  - Communications; and

- Hardware / Software.

Construction Agreements are needed when there is more than one agency involved in providing similar or identical services within the same region, requiring similar or identical private services and equipment. In this instance, the agreement establishes what each agency's responsibility is and how the funding and approvals will be handled.

Operations Agreements are needed when there is more than one agency providing similar or identical services within the same region. In this instance, the agencies will identify which portions of the operation each will be responsible for, how that responsibility will be shared or transferred when warranted, and how funding will be handled. Operations areas that will most likely be the subject of interagency agreements are as follows:

- Staffing;
- Security;

- Hardware / Software management;
- Communications plants;
- Signal control;
- Incident management;
- Data management
- Data distribution;
- Changeable message sign (CMS) operation and control; and
- CCTV operation and control;
- Detection systems operation and control.

Maintenance Agreements are needed when there is more than one agency providing similar or identical services within the same region. In this instance, the agencies will identify which portions of the maintenance each will be responsible for, how that responsibility will be shared or transferred when warranted, and how funding will be handled. Maintenance areas that will most likely be the subject of interagency agreements are as follows:

- Field Equipment;

- Physical Plant Facility –
  - Building management;
  - Security;
  - Furnishings; and
  - Grounds;

- Hardware / Software;

- Communications management; and

- Utility locations.

Several existing agreements for the I-95 corridor are identified *Technical Memorandum No. 1 – ITS Legacy Catalog* as follows:

- **Joint ITS Agreement for the District 2 ITS** – This agreement is between FDOT District 2 and the Department of Highway Safety and Motor Vehicles (DHSMV). It is a five-year agreement, originally initiated in April 2001, which addresses the operation and maintenance of a TMC, staffing of the TMC, and traffic management on the interstate system. District 2 designed, installed, and maintains the ITS; the FHP provides staff for monitoring and dispatching; and District 3 provides an attendant for TMC equipment maintenance.

- **MOU Relative to the Funding, Design, Construction, Operations, and Maintenance of the Broward County ITS Operations Facility –** The agreement is between FDOT District 4 and the Broward County Traffic Engineering Division for the joint funding, design, construction, operations, and maintenance of the Broward County ITS Operations

Facility. District 4 will fund the design, construction, and construction engineering for the first floor of the facility that is designated for ITS operations. Likewise, the county will be responsible for the same elements on the second floor that will house county traffic engineering operations. The Broward County ITS Operations Facility will monitor and operate the CMS system for I-95 and I-595, the Broward County signal system, and will be expandable for other ITS services implemented in the county.

- **Daytona Area Smart Highways (DASH**) – DASH provides traffic surveillance, incident management, and traveler information along I-4 between SR 44 and I-95 and along I-95 from I-4 to U.S. 92. The project is a partnership between FDOT District 5, the City of Daytona Beach, and the Daytona Beach Police. District 5 maintains and operates DASH. The primary control center is located at the City of Daytona Beach's TMC, while the secondary control center is located at the Daytona Beach Police's dispatch and communications center. The FHP is collocated at the TMC and uses incident information collected by DASH to dispatch response vehicles along the interstates. District 5 headquarters has a dial-up connection to review data and can control the variable message signs (VMS) and CCTV cameras.

- **Integration of ITS in Volusia County –** A program is currently planned in District 5 which will allow District 5, the City of Daytona Beach, Volusia County Traffic Engineering, and the Volusia County Transit Agency (VOTRAN) to share all available tourist, incident, congestion, and emergency information via existing ITS services. A design/build criteria package has been developed and a private entity will be selected to develop plans and specifications for the integration of the ITS services. The plans will include the development of a Volusia County ITS architecture that will include the physical architecture, concept of operations and communications, and a master plan. The concept of operations will define the roles and responsibilities of each agency, develop an institutional agreement, and address any operational and maintenance issues associated with the ITS project.

- **MOU for SunGuide℠ ATIS Services for Miami-Dade, Broward and Palm Beach Counties –** This agreement, executed in August of 1999, is a regional ITS agreement that addresses the roles and responsibilities of each agency regarding the operation and deployment of the SunGuide℠ ATIS services for the tri-county area. The eight agencies involved include:

  - FDOT
    - District 4
    - District 6
    - Turnpike
  - Metropolitan Planning Organization (MPO) for the Miami Urbanized Area;
  - Miami-Dade County;
  - Broward County MPO;
  - Broward County;

- MPO of Palm Beach County;
- Tri-County Commuter Rail Authority; and
- Miami-Dade Expressway Authority (MDX).

The ATIS project covers interstate and Turnpike facilities in the tri-county area and includes the coordination of all existing and planned ITS services within the area. The ATIS project creates an additional ITS infrastructure layer providing a seamless multi-modal ITS including 22 of the 31 user services. The primary roles of the partners as identified in the agreement are as follows: District 6 is identified as the lead agency, providing oversight for technical analysis, preparation of plans and documents, public involvement, and agency notification and coordination. Additionally, they are responsible for all coordination and review of actions to support the deployment of systems and normal service operations as specified in contractual agreements. District 4, the Turnpike, Tri-Rail, and MDX will provide coordination and technical assistance related to advancing ATIS services in their jurisdictions and will provide general support for deployment and operations. The MPOs will assist FDOT in coordinating ATIS through the MPOs and between county agencies. The counties will be responsible for review and evaluation of location plans submitted for approval of any new or existing installations necessary in conjunction with the deployment of ATIS.

- **SR 836 (East-West Expressway) ITS Agreement** – This agreement, executed in August of 2000, is between the FHWA, FDOT District 6, and the MDX for the implementation, operation, and maintenance of an ATMS along SR 836 between the HEFT and I-95. The ATMS components will be operated and maintained by District 6 at their SunGuide^{SM} Control Center and the ATMS components will be integrated with the SunGuide^{SM} ATIS to provide seamless ITS services in Miami-Dade County. MDX will be responsible for the implementation, coordination, and administration of the project.

- **Operation Agreements of Motorist Aid Call Boxes –** A statewide motorist aid system using roadside call boxes has been deployed along the entire I-95 corridor at one-mile intervals. The call boxes are a partnership between FDOT and the FHP. Each FDOT district maintains the call boxes, acknowledges calls for assistance, and redirects calls to the FHP. FHP dispatches service vehicles to aid the motorists. The system utilizes a microwave communications backbone operated and maintained by FDOT.

Based on the defined FMS and RR Service Patrol projects for I-95, the agreements shown in Table 5.3 may be necessary to provide support for the ITS deployments and cooperation among the stakeholders:

Table 5.3 – Institutional Agreements for Future ITS Projects Implementation

Category	Stakeholders		Agreements
Freeway Management Systems	**FDOT Turnpike Enterprise**	FDOT District 4	**Jurisdictional Authority Agreement** for the Turnpike to maintain and operate the Turnpike Mainline and the Sawgrass Expressway in District 4.
		FDOT District 6	**Jurisdictional Authority Agreement** for the Turnpike to maintain and operate the Turnpike Mainline and HEFT in District 6.
	FDOT District 6's Miami RTMC	FDOT District 4's Broward County RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between RTMCs.
		Turnpike District's Pompano Beach RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between RTMCs.
		MDX TMC	**Agreements** for information sharing, exchange, and coordination between the RTMC and the local traffic authority.
		Miami-Dade Transit Authority (MDTA)	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		SunGuide℠ Smart Route TMC	**Communications/Coordination Agreements** for ATIS information sharing, exchange, and coordination between the RTMC and the TMC.
		Miami-Dade County Traffic Control Center	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		SunPass® Service Center	**Operations, Maintenance/Resource Allocation, and Sharing Agreements** for toll operations and management between the RTMC and the ***SunPass***® Service Center.
		Tri-County Commuter Rail Authority	**Communications/Coordination Agreements** for information sharing, exchange, urban planning, and coordination between the RTMC and the local commuter rail authority.
		Miami RCC (FHP Troop F)	**Operations/Maintenance Agreements** for regional security, incident management, and operations between the RTMC and the RCC.
	FDOT District 4's Broward County RTMC	Turnpike District's Pompano Beach RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between RTMCs.
		Turnpike District's Pompano Beach RTMC	**Operations/Maintenance Agreements** for the Turnpike's Pompano Beach RTMC to act as a back-up for the Broward County RTMC.
		Broward County Traffic Control Center	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		Tri-County Commuter Rail Authority	**Communications/Coordination Agreements** for information sharing, exchange, urban planning, and coordination between the RTMC and the local commuter rail authority.
		Broward County Transit Agency	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local transit authority.

Table 5.3 (Continued)

Category	Stakeholders	Agreements	Category
Freeway Management Systems	**FDOT District 4's Broward County RTMC**	Lake Worth RCC (FHP Troop L)	**Operations/Maintenance Agreements** for regional security, incident management, and operations between the RTMC and the RCC.
		SunPass® Service Center	**Operations, Maintenance/Resource Allocation, and Sharing Agreements** for toll operations and management between the RTMC and the ***SunPass***® Service Center.
		SunGuide℠ Smart Route TMC	**Communications/Coordination Agreements** for ATIS information sharing, exchange, and coordination between the RTMC and the TMC.
	District 4's Palm Beach County RTMC	Turnpike District's Pompano Beach RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between RTMCs.
		FDOT District 5's Orlando RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMCs.
		FDOT District 4's Broward County RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMCs.
		Martin County Traffic Control Center	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		St. Lucie County Traffic Control Center	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		Palm Beach County Traffic Control Center	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		Palm Beach County Transportation Authority	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local TMC.
		Lake Worth RCC (FHP Troop L)	**Operations/Maintenance Agreements** for regional security, incident management, and operations between the RTMC and the RCC.
		SunGuide℠ Smart Route TMC	**Communications/Coordination Agreements** for ATIS information sharing, exchange, and coordination between the RTMC and the TMC.
		Tri-County Commuter Rail Authority	**Communications/Coordination Agreements** for information sharing, exchange, urban planning, and coordination between the RTMC and the local commuter rail authority.

Table 5.3 (Continued)

Category	Stakeholders	Agreements	Category
Freeway Management Systems	**FDOT District 2's Jacksonville RTMC**	FDOT District 5's Orlando RTMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between RTMCs.
		St. Augustine TMC	**Communications/Coordination Agreements** for ATIS information sharing, exchange, and coordination between the RTMC and the TMC.
		City of Jacksonville TMC	**Communications/Coordination Agreements** for ATIS information sharing, exchange, and coordination between the RTMC and the TMC.
		Jacksonville Transit Authority TMC	**Communications/Coordination Agreements** for information sharing, exchange, and coordination between the RTMC and the local transit authority.
		Jacksonville RCC (FHP Troop G)	**Operations/Maintenance Agreements** for regional security, incident management, and operations between the RTMC and the RCC.
RR Service Patrols	**FDOT District 6's Miami RTMC**	Private Sector	**Legal Agreements** for the procurement of services by FDOT from private sectors.
		FDOT District 4's Broward County RTMC	**Operations/Maintenance Agreements** for incident management and operations between the RR Service Patrols and the RTMC.
		Turnpike District's Pompano Beach RTMC	**Operations/Maintenance Agreements** for incident management and operations between the RR Service Patrols and the RTMC.
	FDOT District 4's Broward County RTMC	Private Sector	**Legal Agreements** for the procurement of services by FDOT from private sectors.
		FDOT District 4's Palm Beach County RTMC	**Operations/Maintenance Agreements** for incident management and operations between the RR Service Patrols and the RTMC.
		Turnpike District's Pompano Beach RTMC	**Operations/Maintenance Agreements** for incident management and operations between the RR Service Patrols and the RTMC.
	FDOT District 4's Palm Beach County RTMC	Private Sectors	**Legal Agreements** for the procurement of services by FDOT from private sectors.
		FDOT District 5's Orlando RTMC	**Operations/Maintenance Agreements** for incident management and operations between the RR Service Patrols and the RTMC.
		Turnpike District's Pompano Beach RTMC	**Operations/Maintenance Agreements** for incident management and operations between the RR Service Patrols and the RTMC.
	FDOT District 2's Jacksonville RTMC	Private Sectors	**Legal Agreements** for the procurement of services by FDOT from private sectors.
		FDOT District 5's Orlando RTMC	**Operations/Maintenance Agreements** for incident management operations between the RR Service Patrols and the RTMC.

Table 5.3 (Continued)

Category	Stakeholders	Agreements	Category
Freeway Management Systems/RR Service Patrols	**FDOT District 4**	FDOT District 6	**Funding, Design, Planning, Procurement, Construction, and Operations and Maintenance Agreements** when implementing ITS projects among authorities.
		Turnpike District	**Funding, Design, Planning, Procurement, Construction, and Operations and Maintenance Agreements** when implementing ITS projects among authorities.

5.4.3 Procurement Options for ITS Projects

When implementing ITS, states have several types of contracting options available for procurement purposes. If utilizing federal funding sources, the issue of whether the project qualifies as "construction" must be addressed. In general terms, a project can be classified as construction if it is primarily concerned with the building or reconstruction of a highway or with the direct facilitation of traffic control.

Although ITS are, by their nature, intended to ease congestion and positively affect the flow of traffic, they may not meet the federal definition of construction for the purposes of limiting contracting options. Any project that strictly involves the installation of field devices is considered construction. However, if the project involves software for controlling the devices or the configuration of the devices in a central control or communications center/system, it is not construction. Also, if the project requires only limited installation of field devices, such as with wireless communications and portable message signs, then the project will not be considered as a construction project. Each project and its unique qualities must be considered individually in order to determine whether it might be classified as construction.

Projects utilizing federal funding sources must be categorized into either "construction" or "non-construction" type projects. The reason for this categorization is that federal laws require projects funded by federal funds to be procured using particular contracting methods. Historically, state departments of transportation (DOTs) have engaged almost exclusively in projects firmly in the construction category. However, more recently, the DOTs have been becoming involved in projects that have elements not clearly within that arena. Although ITS projects are intended to address surface transportation issues familiar to DOTs such as safety, efficiency, mobility, congestion, and quality of life (generally the same issues addressed by traditional construction projects), they also include elements such as telecommunications, computers, software, electronics, and sensing technologies that are new to DOT project managers. Therein lies the difficulty in deploying ITS projects.

There are four types of contracting possibilities that are applicable to ITS project procurement. These types are:

- Traditional construction contracts;
- Engineering and design services contracts;
- Non-engineering and non-architectural contracts; and
- Innovative contracts.

Title 23 United States Code (USC), Section 101, defines construction as:

> *"…the supervising, inspecting, actual building, and all expenses incidental to the construction or reconstruction of a highway,…**and improvements which directly facilitate and control traffic flow**, such as grade separation of intersections, widening of lanes, channelization of traffic, **traffic control systems**, and passenger loading and unloading areas."*

It is apparent from this definition that ITS projects can and do include components that fit this definition; however, they also include components that do not. The following table illustrates some of the possible components of an ITS project and how they can be classified as construction or non-construction. Table 5.4 illustrates some of the possible components of an ITS project and how they can be classified as construction or non-construction.

Table 5.4 – Classification of ITS Project Components

Classification	Component
Construction	• Physical installation of field hardware and devices for freeway management and traffic signal systems including DMS, ramp meters, new traffic signals, new controller cabinets, land-use control signs, and vehicle detectors. • Installation of towers to support wireless communications, direct-bury conduit, and hardwire interconnect between signals and field devices or systems. • Installation of field hardware and devices to provide detection and verification capabilities.
Non-construction	• Procurement of portable message signs, field device and communications system interfaces, operating system software development, and computer hardware. • Communications devices that are wireless or require only limited installation in concept. • Coordination and pre-planned incident management activities such as service patrol, route diversion, E-911 systems, computer-aided dispatch (CAD) systems, radio systems, and special events coordination.

Source: FHWA Memorandum, "*Procurement Information for ITS Projects*," May 1997

The traditional procurement method employed in construction projects is the competitive bidding process wherein the lowest responsive and responsible bidder is selected. Although this method has been proven effective with construction projects, its success with ITS projects is not as clear. One reason is the fact that the separation between the design and construction elements of an ITS project is difficult to determine. Another is that a typical ITS project involves the implementation of advanced technologies including software development and the integration of computer-based systems, and expertise with such technologies is rare among construction contractors that normally bid on DOT projects.

Engineering and design services contracts are defined by Title 23, CFR, Part 172, as program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services. The agency may retain such services prior to construction to obtain such deliverables as functional definition, preliminary or final design, feasibility analysis, and plans, specifications, and estimates, and use the documents in bid invitation, evaluation, and award.

Non-engineering/Non-architectural contracts typically apply to procuring goods, services, supplies, equipment, and research and planning studies such as ITS field operational tests and early deployment studies.

Innovative contracts refer to contracting techniques having the potential to reduce life-cycle costs and maintain product quality. FHWA established Special Experimental Project No. 14 (SEP-14) – Innovative Contracting Practices in 1990 in order to enable states to implement and evaluate non-traditional contracting practices that would allow them to add quality and timeliness to their projects while maintaining the advantage of competition in the procurement process. Examples of innovative contracts are lane-rental, warranty, cost-plus-time bidding, and design-build. However, all of the above practices with the exception of design-build have subsequently been approved by the FHWA as non-experimental and now require only FHWA division administrator approval. Currently, only projects that utilize factors other than cost in the award process and those that incorporate both design and construction in one contract (design-build) require approval from FHWA headquarters as "experimental" contracting practices.

Although the above descriptions appear to be constraining, there are several contracting techniques that allow more flexibility under each procurement type. The selection of appropriate contracting options depends on several variables, including:

- Type and complexity of project requirements;
- Interdependence of subsystems and components of the project;
- Inclusion of roadway construction along with ITS services;
- Implementation of emerging and/or rapidly changing technologies;
- Need for contractor pre-qualification; and
- Limited or constrained project schedule.

One method of increasing the likelihood of an ITS project being successfully implemented is grouping the project elements into logical components and using the appropriate procurement method for each. Typical project components may be products, systems, and/or services. The physical installations can employ the traditional design-bid-build method while a systems manager can be retained in order to accomplish new systems development or integration with legacy systems. For extremely complex or severely schedule-limited projects, the design-build technique may be appropriate. In addition, applying the pre-qualification feature of contracting techniques can complement each of the above options. Design-build is unique in that it is the only technique that combines the engineering and design services phase and the construction phase into one contract. The design-bid-build and systems manager techniques both divide these two phases into two separate contracts.

Design-Bid-Build Approach – Design-bid-build is probably the most familiar project delivery vehicle to most transportation professionals. In this scenario, the project design is accomplished by either a contracted engineering consultant or by in-house staff. The next step is to invite contractors to submit bids and, after awarding the contract to the lowest bidder, the project is constructed. While this method is effective with traditional construction projects, difficulties may be encountered when the project includes components such as computer hardware and software, communications systems, other rapidly changing technologies, and in cases where the functional and operational requirements of the project are not clearly defined. It can, however, be well suited for ITS projects characterized by tasks such as constructing a TMC, system expansion where detailed specifications are available, off-the-shelf or proprietary components, and physical installations of devices. This familiar technique for procurement can be beneficial due to the increased level of competition and pool of potential bidders, its simplicity, and the lack of need for justification for its use. Its limitations for project elements like those mentioned previously are highlighted by the challenges of providing detailed requirements that allow the establishment of realistic low bids, minimizing deployment schedule, and finding a single vendor with adequate knowledge and experience to perform all required services at a fixed price.

Design-Build Approach – Design-build is a contracting technique that, rather than having two sequential contracts for engineering and design services and construction as in design-bid-build, combines the two "phases" to be let as one contract. Some of the challenges associated with employing design-bid-build can be overcome using design-build. In addition, features such as pre-qualification, competitive sealed bidding, and basing award criteria on price and other factors increase its flexibility. This technique is especially useful for projects that have clearly defined functional and performance requirements, but can potentially benefit from innovation in the achievement of those goals. In addition, projects requiring significant systems integration and having complex, unknown, or rapidly changing technology components or severe schedule limitations are well suited for design-build.

The transportation agency typically provides preliminary plans, detailed specifications, design criteria, and scope of work to prospective bidders, and the proposals are ranked based on design quality, management capability, scheduling, and cost. The selected contractor is then responsible for completing detailed design and systems engineering, procurement of all devices, systems, and services, testing, inspection and systems integration, and final system deployments. In some cases the deployed system is leased, maintained, or operated by the contractor for a specified

period of time before final acceptance by the agency. The design-build technique allows maximum flexibility for design innovation, optimizes project development and deployment as well as schedule, and provides a single point of contact for consistent and continuous quality assurance throughout the project. Difficulties may arise with this method, however, if well-defined functional and operational specifications are not developed beforehand. Also, the requirement for overlapping skills in design, integration, and construction along with the increased burden of responsibility and risk to the contractor may limit the pool of prospective bidders and may result in higher overall cost to the agency.

In the last quarter of 2001, both the federal and state governments took steps to simplify, broaden, and ease the restrictions for using the design-build contracting method.

In November, Florida Governor Jeb Bush signed a bill, CS/SB 24-B, that will allow FDOT, until June 30, 2003, to combine right-of-way phases with design and construction phases and allows FDOT to enter into design-build contracts prior to obtaining title for all rights-of-way. The bill also lifted the $120 million annual statewide limit for design-build projects.

In October, the FHWA issued a Notice of Proposed Rulemaking to implement regulations for design-build contracts. Currently, all design-build projects are considered "experimental" and states must follow the procedures of SEP-14 to qualify for federal aid. The Notice of Proposed Rulemaking proposes to allow the use of design-build contracting under new regulations for "qualified projects," while projects that are not "qualified" would continue to follow the SEP-14 procedures. Qualified projects are defined in the Notice of Proposed Rulemaking as any project with a total estimated cost greater than $50 million or an ITS project greater then $5 million.

Systems Manager Approach – The systems manager is a project delivery strategy that incorporates elements of both the design-bid-build and the design-build techniques. The system manager responsibilities overlap the design and construction phases of the project, typically including development of plans, specifications, and estimates, development of project sequencing and coordination of subsystems, design, inspection, testing, and integration of system components into a complete operating system. This technique employs the separate services of “engineering and design” and “construction” while maintaining a single point of responsibility for systems design and integration. Project elements that make the system manager option attractive are projects including complex or rapidly changing technology such as computer hardware, software, and communications, and extensive integration and/or expansion of subsystems or legacy systems. Benefits of this technique include providing seamless systems integration and deployment which has the potential to positively impact the cost-effectiveness and schedule of the project, allowing greater flexibility in determination of scope of work and system requirements and allowing the agency to maintain authority for project management. On the other hand, the costs may be increased because the systems manager may not have control over construction contracts, and the need for quality oversight by the agency is great in order to avoid design errors and omissions.

In addition to the above techniques, agencies may employ the pre-qualification feature of contracting in order to limit potential contractors to those that possess the required skills, experience level, and the familiarity to design or construct an ITS project containing advanced technologies and complex systems. This feature can enhance the potential for a quality project by increasing the likelihood of selecting an experienced consultant or contractor that possesses the specific skills and experience required to develop or deploy the project. However, care must be taken to ensure that the pre-qualification criteria do not fail to incorporate skills specific to ITS components if done as part of a larger project. Also, this feature may increase the cost and time to deploy a project due to the required development of the criteria as well as the added step in the selection process.

The following optional provisions, which are no longer considered experimental by the FHWA, may also be incorporated if applicable to ITS projects. Cost-plus-time bidding encourages contractors to complete a project ahead of schedule by offering financial incentives, and discourages schedule overruns by assessing fees. Lane rental is used to minimize construction impacts on travelers by requiring the contractor to pay fees, weighted for peak travel periods, for lane or ramp closures. Warranty provisions require the prime contractor to guarantee workmanship or materials for a limited time period.

5.4.4 Summary

Perhaps the most important aspect of successful ITS project deployment is an agency's ability to maintain a flexible approach to choosing a method of procurement. Because each project is unique and has vastly differing elements of construction, systems development and integration, complex technologies, and cost and schedule constraints, each project must be considered and its components defined individually. The procurement method chosen will significantly affect the deployment of the project. Since ITS projects are not typical highway construction projects, traditional methods employed by transportation agencies may not be the best solution. Since construction, engineering and design services, and non-engineering/non-architectural types of projects form the framework for grouping requirements in terms of products, services, and systems, the best solution may sometimes be to divide the project into components that individually meet these definitions and select procurement options accordingly. Because the "line" between construction and design may not be easily identified, this task may be one of the most challenging in the process.

5.5 Project Cost Estimates

As discussed previously in Section 5.2, the toolbox was used to estimate the project devices and conceptual design. These devices were then inventoried for each proposed project and a unit cost was applied to the devices to determine construction, operations, and maintenance costs for the proposed projects. The unit costs are based on estimates provided by the districts as well as the FHWA ITS Unit Costs Database. Each proposed project was then combined with the projects developed by FDOT Districts 2, 5, 4, and 6. The unit costs are provided in Appendix B. Table 5.5 and Figure 5.3 illustrate the ITS needs for the I-95 corridor.

The same methodology was used to calculate the costs of the planned I-95 projects presented by Districts 2, 5, 4, and 6. The devices and device locations were derived from the *SMIS/DASH Expansion* prepared by District 5 and the *Jacksonville Surveillance and Control System Master Plan* prepared by District 2.

Operations and maintenance costs were calculated based on the life-cycle of the project devices, assuming a ten-year life cycle. The life-cycle unit costs were also derived from the FHWA ITS Unit Costs Database and are also contained in Appendix B. Once the construction, operations, and maintenance costs were estimated, design, construction, engineering, and inspection costs were calculated based on FDOT's standard cost estimation methodology that assumes a percentage of the project construction cost. Fifteen percent of the construction cost was assumed for design and twenty percent was assumed for construction, engineering, and inspection.

Table 5.5 - Corridor Needs

Facility: *I-295*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
2	I-10	I-95 N	Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	PE	$0.360
2	I-10	I-95 N	Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	CONST	$3.000
2	I-10	I-95 N	Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	CEI	$0.600
2	I-95 S	I-10	Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	PE	$0.558
2	I-95 S	I-10	Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	CONST	$3.722
2	I-95 S	I-10	Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	CEI	$0.744
2	I-295 S at I-95	Old St. Augustine Road	Road Ranger Service Patrol	RR	PE	$0.062
2	US 17 Interchange	I-295 N at I-95	Road Ranger Service Patrol	RR	PE	$0.509
2	I-10	I-95N	Fiber Optic Network	FON	PE	$0.200
2	I-10	I-95N	Fiber Optic Network	FON	CONST	$1.675
2	I-10	I-95N	Fiber Optic Network	FON	CEI	$0.130
2	I-95S	I-10	Fiber Optic Network	FON	PE	$0.286
2	I-95S	I-10	Fiber Optic Network	FON	CONST	$2.390
2	I-95S	I-10	Fiber Optic Network	FON	CEI	$0.190
				PDC Sum		$14.426

Table 5.5 - Corridor Needs

Facility: *I-595*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
4	I-75	U.S. 1	OVCS Variable Speed Zone	FMS	PE	$0.300
4	I-75	U.S. 1	OVCS Variable Speed Zone	FMS	CONST	$2.000
4	I-75	U.S. 1	OVCS Variable Speed Zone	FMS	CEI	$0.400
				PDC Sum		$2.700

Table 5.5 - Corridor Needs

Facility: *I-95*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
2	I-10	Airport Road	Fiber Optic Network	FON	PE	$0.163
2	I-10	Airport Road	Fiber Optic Network	FON	CONST	$1.355
2	I-10	Airport Road	Fiber Optic Network	FON	CEI	$0.110
2	I-10	Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units, DMSS	FMS	PE	$0.142
2	I-10	Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units, DMSS	FMS	CONST	$0.945
2	I-10	Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units, DMSS	FMS	CEI	$0.189
2	Trout River	Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units, DMSS	FMS	PE	$0.263
2	Trout River	Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units, DMSS	FMS	CONST	$1.754
2	Trout River	Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units, DMSS	FMS	CEI	$0.351
2	CR 210 Interchange		Rural Freeway Incident Management System(R-1)	FMS	PE	$0.101
2	CR 210 Interchange		Rural Freeway Incident Management System(R-1)	FMS	CONST	$0.671
2	CR 210 Interchange		Rural Freeway Incident Management System(R-1)	FMS	CEI	$0.134
2	SR 16 Interchange N	SR 16 Interchange S	Rural Freeway Incident Management System(R-1)	FMS	PE	$0.101
2	SR 16 Interchange N	SR 16 Interchange S	Rural Freeway Incident Management System(R-1)	FMS	CONST	$0.671
2	SR 16 Interchange N	SR 16 Interchange S	Rural Freeway Incident Management System(R-1)	FMS	CEI	$0.134
2	SR 206 Interchange		Rural Freeway Incident Management System(R-1)	FMS	PE	$0.101
2	SR 206 Interchange		Rural Freeway Incident Management System(R-1)	FMS	CONST	$0.671
2	SR 206 Interchange		Rural Freeway Incident Management System(R-1)	FMS	CEI	$0.134
2	SR 207 Interchange		Rural Freeway Incident Management System(R-1)	FMS	PE	$0.101
2	SR 207 Interchange		Rural Freeway Incident Management System(R-1)	FMS	CONST	$0.671

Table 5.5 - Corridor Needs

Facility: *I-95*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
2	SR 207 Interchange		Rural Freeway Incident Management System(R-1)	FMS	CEI	$0.134
2	US 17 Interchange and Visitor Center		Rural Freeway Incident Management System(R-2)	FMS	PE	$0.101
2	US 17 Interchange and Visitor Center		Rural Freeway Incident Management System(R-2)	FMS	CONST	$0.671
2	US 17 Interchange and Visitor Center		Rural Freeway Incident Management System(R-2)	FMS	CEI	$0.134
2	SR A1A Interchange		Rural Freeway Incident Management System (R-2)	FMS	PE	$0.101
2	SR A1A Interchange		Rural Freeway Incident Management System (R-2)	FMS	CONST	$0.671
2	SR A1A Interchange		Rural Freeway Incident Management System (R-2)	FMS	CEI	$0.134
2	Duval/Nassau Co. Line	Nassau/Georgia State Co. Line	Road Ranger Service Patrol	RR	PE	$0.196
2	Flagler/St. Johns Co. Line	St. Johns/Duval Co. Line	Fiber Optic network	FON	PE	$0.483
2	Flagler/St. Johns Co. Line	St. Johns/Duval Co. Line	Fiber Optic network	FON	CONST	$4.030
2	Flagler/St. Johns Co. Line	St. Johns/Duval Co. Line	Fiber Optic Network	FON	CEI	$0.322
2	I-295 N	Georgia State Line	Fiber Optic Network	FON	PE	$0.285
2	I-295 N	Georgia State Line	Fiber Optic Network	FON	CONST	$2.377
2	I-295 N	Georgia State Line	Fiber Optic Network	FON	CEI	$0.190
				PDC Sum		$18.585

Table 5.5 - Corridor Needs

Facility: *I-95*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
4	Martin/St. Lucie Co. Line	St. Lucie Indian River Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE	$0.612
4	Martin/St. Lucie Co. Line	St. Lucie Indian River Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST	$4.083
4	Martin/St. Lucie Co. Line	St. Lucie Indian River Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI	$0.817
4	Palm Beach/Martin Co Line	Martin/St. Lucie Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE	$0.411
4	Palm Beach/Martin Co Line	Martin/St. Lucie Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST	$2.742
4	Palm Beach/Martin Co Line	Martin/St. Lucie Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI	$0.548
4	St. Lucie Co. Line/Indian Co. Line	Indian Co. Line/Brevard Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE	$0.201
4	St. Lucie Co. Line/Indian Co. Line	Indian Co. Line/Brevard Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST	$1.341
4	St. Lucie Co. Line/Indian Co. Line	Indian Co. Line/Brevard Co. Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI	$0.268
4	Broward/Palm Beach Co. Line	Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	PE	$0.300
4	Broward/Palm Beach Co. Line	Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	CONST	$2.000
4	Broward/Palm Beach Co. Line	Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	CEI	$0.400
4	Miami-Dade/Broward Co. Line	Broward/Palm Beach Co. Line	OVCS Variable Speed Zone	FMS	CONST	$2.000
4	Palm Beach/Martin Co Line	Martin/St. Lucie Co. Line	Road Ranger Service Patrol	RR	PE	$0.325
4	Martin/St. Lucie Co. Line	St. Lucie Indian River Co. Line	Road Ranger Service Patrol	RR	PE	$0.435
4	St. Lucie Co. Line/Indian Co. Line	Indian Co. Line/Brevard Co. Line	Road Ranger Service Patrol	RR	PE	$0.307
4	Palm Beach/Martin Co. Line	Indian River/Brevard Co. Line	Fiber Optic Network	FON	PE	$0.990
4	Palm Beach/Martin Co. Line	Indian River/Brevard Co. Line	Fiber Optic Network	FON	CONST	$8.260
4	Palm Beach/Martin Co. Line	Indian River/Brevard Co. Line	Fiber Optic Network	FON	CEI	$0.661
				PDC Sum		$26.701

Table 5.5 - Corridor Needs

Facility: *I-95*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
5	US 1 (Volusia County)	US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	PE	$0.900
5	US 1 (Volusia County)	US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	CONST	$5.980
5	US 1 (Volusia County)	US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	CEI	$1.190
5	SR 44	US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	PE	$0.276
5	SR 44	US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	CONST	$1.837
5	SR 44	US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	CEI	$0.367
5			District 5 Headquarters STMC in Deland	RTMC	CONST	$0.230
5	Indian River/Brevard Co. Line	SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	PE	$1.864
5	Indian River/Brevard Co. Line	SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	CONST	$12.428
5	Indian River/Brevard Co. Line	SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	CEI	$2.486
5	Indian River/ Brevard Co. Line	Brevard/Volusia Co. Line	Road Ranger Service Patrol	RR	PE	$1.225
5	Brevard/Volusia Co. Line	Volusia/Flagler Co. Line	Road Ranger Service Patrol	RR	PE	$0.799
5	Volusia/Flagler Co. Line	Flagler/St. Johns Co. Line	Road Ranger Service Patrol	RR	PE	$0.330
5	US 1 (Volusia County)	US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	PE	$0.050
5	US 1 (Volusia County)	US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	CONST	$0.377
5	US 1 (Volusia County)	US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	CEI	$0.030
5	Indian River/Brevard Co. Line	SR 44	Fiber Optic Network	FON	PE	$0.845
5	Indian River/Brevard Co. Line	SR 44	Fiber Optic Network	FON	CONST	$7.050

Table 5.5 - Corridor Needs

Facility: *I-95*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
5	Indian River/Brevard Co. Line	SR 44	Fiber Optic Network	FON	CEI	$0.564
5	SR 44	US 1 (Volusia County)	Fiber Optic Network	FON	PE	$0.235
5	SR 44	US 1 (Volusia County)	Fiber Optic Network	FON	CONST	$1.960
5	SR 44	US 1 (Volusia County)	Fiber Optic Network	FON	CEI	$0.156
				PDC Sum		$41.178

Table 5.5 - Corridor Needs

Facility: *SR 9A*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
2	FIHS Limits		Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	PE	$0.430
2	FIHS Limits		Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	CONST	$3.601
2	FIHS Limits		Incident Management System, Traveler Information, Management Center and Fiber Optics	FMS	CEI	$0.720
2	SR 9A S at I-95	SR 9A N at I-95	Road Ranger Service Patrol	RR	PE	$0.400
2	FIHS Limits		Fiber Optic Network	FON	PE	$0.200
2	FIHS Limits		Fiber Optic Network	FON	CONST	$1.680
2	FIHS Limits		Fiber Optic Network	FON	CEI	$0.134
				PDC Sum		$7.165

Table 5.5 - Corridor Needs

Facility: *SR 9A*

District	*From*	*To*	*Description*	*Type*	*Phase*	*PDC*
				Grand Total All Facilities		*$110.755*

Figure 5.3 – I-95 Corridor ITS Needs

5.6 Project Priorities and Phasing

Once the planned ITS projects were defined, they were combined with the planned ITS projects developed by FDOT Districts 2, 5, 4, and 6 as part of their ITS feasibility studies. The proposed and planned projects were regrouped as projects and then prioritized according to the following prioritization methodology.

5.6.1 Prioritization Methodology

The following assumptions and constraints were considered in developing the strategic approach for prioritization of ITS.

Table 5.6 – Criteria for Prioritizing ITS Deployments

Criteria	Measure	Score	Weighting
Population and Urbanization	Population within each county as derived from the 2000 Census.	Based on percentile rank of the most populated to the least populated	10%
Incidents	Safety ratio as provided by the Safety Office.	Based on percentile rank from the highest to lowest safety ratio.	20%
Congestion Levels	Percent of travel heavily congested (LOS E/F) along each corridor as defined by the Mobility Performance Measures program (TranStat).	Based on percentile rank from the highest percentage of travel congested to lowest.	20%
Special Event Generators	Number of attendees of special events in each county each year as provided by Visit Florida and through research of known venues and special events.	Based on percentile rank from the highest number of attendees to lowest by county.	10%
Evacuation Coordination	Number of evacuees generated on each facility during a critical storm event as determined using the demand estimating tool generated by PBS&J for the U.S. Army Corps of Engineers.	Based on percentile rank from the highest number of evacuees to lowest by county.	15%
CVO Operations	Truck volume as reported in the Roadway Characteristics Inventory (RCI).	Based on percentile rank from the highest truck volume to lowest by segment.	5%
Production Capability	Project Phase Complete o Design Complete o Design Criteria Complete or Design Underway	100 67	5%
Programmed Improvement Construction Capacity	Programmed capacity improvement where permanent installation can be used to support smart work zone management	Improvement Fiscal Year FY03 – 100% FY04 – 80% FY05 – 60% FY06 – 40% FY07 – 20%	15%
		TOTAL	**100%**

Following the application of these prioritization criteria, the results were analyzed and adjusted to reflect the following:

- Systems continuity and connectivity to existing ITS services and communications systems;
- Coordination with capacity improvement projects that are included in the *Ten-Year FIHS Cost-Feasible Plan;*
- Reasonableness and logical termini;
- Local needs and priorities addressed in corridor and regional ITS plans prepared by the districts and expressway authorities;
- Congestion mitigation for severely congested facilities;
- Safety considerations to address high-accident locations; and
- Consideration of priorities provided by the expressway authorities.

Table 5.7 summarizes the high and moderate priority segments for I-95, I-295, I-595, and SR 9A. The need for ITS deployment is supported on a statewide basis for all FIHS limited-access corridors. This table summarizes the relative priority of ITS for the purposes of phasing implementation only. Figure 5.4 illustrates the result of the prioritization analysis for the I-95 corridor and recommended prioritization based on high, moderate and low priorities.

5.6.2 Project Phasing for the I-95 Corridor

Table 5.8 and Figures 5.5 through 5.8 illustrate the ten-year ITS cost-feasible plan deployments along the I-95, I-295, I-595, and SR 9A corridors. The recommended ranking and phasing of the deployments were based on district priorities and the prioritization methodology.

Table 5.7 – Priority Segments for ITS Deployment [1]

Facility	Relative Priority	Area	From	To	Existing Freeway Management Systems?
I-95	High	Jacksonville	I-10	I-295	
I-95	High	Miami	U.S. 1 (Dixie Highway)	Ives Dairy Road	Yes
I-95	High	Ft. Lauderdale/ Palm Beach	Ives Dairy Road	CR 706 Donald Ross Road (Martin Co.)	
I-595	High	Ft. Lauderdale	SR 7	SR 5	
I-95	Moderate	Jacksonville	CR 110	Bay Street West	
I-95	Moderate	Jacksonville	I-295	Duval/St. Johns County Line	
I-295	Moderate	Jacksonville	Pritchard Road	I-95 (South)	
I-95	Moderate	St. Augustine	SR 206	St. Johns/Flagler County Line	
I-95	Moderate	Daytona/Cocoa	Flagler/Volusia County Line	Brevard/Indian River County Line	
I-95	Moderate	Stuart/Jupiter	SR 76	Donald Ross Road	
I-595	Moderate	Ft. Lauderdale	SW 136 Avenue	SR7	
I-195	Moderate	Miami	Entire length		

[1] The need for ITS deployment is supported on a statewide basis for all FIHS limited-access corridors. This table summarizes the relative priority of ITS for the purposes of phasing implementation only.

Figure 5.4 – I-95 Corridor *ITS Program Plan* Priorities (Adjusted)

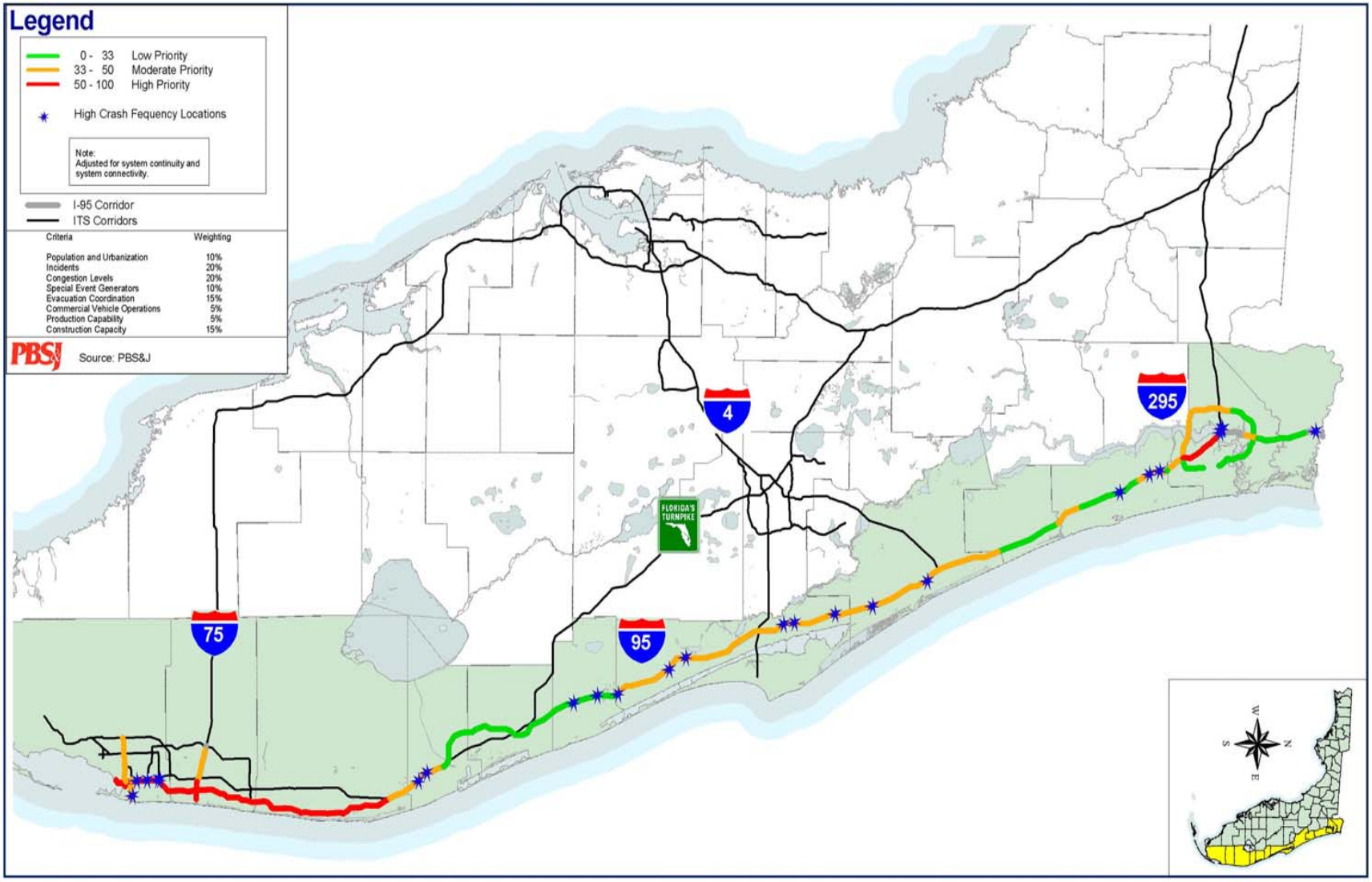


Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
4100201	1	I-4	From Hillsborough Co. Line to Polk Co. Line	I-4 Corridor Consultant	MOT	CONST	$5.47											$5.47	District	
4100201	1	I-4	From Hillsborough Co. Line to Polk Co. Line	I-4 Corridor Consultant	MOT	CEI	$1.40											$1.40	Statewide	
102501	1	I-75	From Collier/Lee County Line to Lee/Charlotte County Line	Freeway and Incident Management System	FMS	PE				$0.41								$0.41	Statewide	
102502	1	I-75	From Collier/Lee County Line to Lee/Charlotte County Line	Freeway and Incident Management System	FMS	CONST				$3.42								$3.42	Statewide	
102503	1	I-75	From Collier/Lee County Line to Lee/Charlotte County Line	Freeway and Incident Management System	FMS	CEI				$0.68								$0.68	Statewide	
102701	1	I-75	From Sarasota/Manatee County Line to I-275 (Manatee)	Freeway Management System	FMS	PE										$0.65		$0.65	Statewide	
102702	1	I-75	From Sarasota/Manatee County Line to I-275 (Manatee)	Freeway Management System	FMS	CONST											$4.47	$4.47	Statewide	
102703	1	I-75	From Sarasota/Manatee County Line to I-275 (Manatee)	Freeway Management System	FMS	CEI											$0.89	$0.89	Statewide	
102801	1	I-75	From Charlotte/ Sarasota County Line to Sarasota /Manatee County Line	Freeway Incident Management System	FMS	PE								$0.90				$0.90	Statewide	
102802	1	I-75	From Charlotte/ Sarasota County Line to Sarasota/ /Manatee County Line	Freeway Incident Management System	FMS	CONST									$5.03	$2.80		$7.83	Statewide	
102803	1	I-75	From Charlotte/ Sarasota County Line to Sarasota /Manatee County Line	Freeway Incident Management System	FMS	CEI									$1.01	$0.56		$1.57	Statewide	
103602	1	I-75		Ft. Myers RTMC/Systems Integration	RTMC	CONST				$2.22								$2.22	Statewide	
104201	1	I-75	From Broward/Collier County Line to Collier/Lee County Line	Freeway Incident Management System	FMS	PE				$0.68								$0.68	Statewide	
104202	1	I-75	From Broward/Collier County Line to Collier/Lee County Line	Freeway Incident Management System	FMS	CONST				$5.69								$5.69	Statewide	
104203	1	I-75	From Broward/Collier County Line to Collier/Lee County Line	Freeway Incident Management System	FMS	CEI				$1.14								$1.14	Statewide	
111701	1	I-75		Sarasota TMC/Building	RTMC	PE				$0.27								$0.27	Statewide	
111702	1	I-75		Sarasota TMC/Building	RTMC	CONST				$2.22								$2.22	Statewide	
111703	1	I-75		Sarasota TMC/Building	RTMC	CEI				$0.44								$0.44	Statewide	
111802	1	I-75		Sarasota TMC/Systems	RTMC	CONST				$0.68								$0.68	Statewide	
137301	1	I-75	From Collier/Lee Co. Line to Lee/Charlotte Co. Line	Fiber Optic Network	FON	PE				$0.53								$0.53	Statewide	
137302	1	I-75	From Collier/Lee Co. Line to Lee/Charlotte Co. Line	Fiber Optic Network	FON	CONST				$4.39								$4.39	Statewide	
137303	1	I-75	From Collier/Lee Co. Line to Lee/Charlotte Co. Line	Fiber Optic Network	FON	CEI				$0.35								$0.35	Statewide	
137401	1	I-75	From Lee/ Charlotte Co. Line to Charlotte/Sarasota Co. Line	Fiber Optic Network	FON	PE								$0.39				$0.39	Statewide	
137402	1	I-75	From Lee/ Charlotte Co. Line to Charlotte/Sarasota Co. Line	Fiber Optic Network	FON	CONST								$3.22				$3.22	Statewide	
137403	1	I-75	From Lee/ Charlotte Co. Line to Charlotte/Sarasota Co. Line	Fiber Optic Network	FON	CEI								$0.26				$0.26	Statewide	
137501	1	I-75	From Sarasota/Manatee Co. Line to I-275 (Manatee County)	Fiber Optic Network	FON	PE										$0.29		$0.29	Statewide	
137502	1	I-75	From Sarasota/Manatee Co. Line to I-275 (Manatee County)	Fiber Optic Network	FON	CONST											$2.48	$2.48	Statewide	
137503	1	I-75	From Sarasota/Manatee Co. Line to I-275 (Manatee County)	Fiber Optic Network	FON	CEI											$0.20	$0.20	Statewide	
138201	1	I-75	From Charlotte/Sarasota Co. Line to Sarasota/Manatee Co. Line	Fiber Optic Network	FON	PE									$0.77			$0.77	Statewide	
138202	1	I-75	From Charlotte/Sarasota Co. Line to Sarasota/Manatee Co. Line	Fiber Optic Network	FON	CONST									$6.44			$6.44	Statewide	
138203	1	I-75	From Charlotte/Sarasota Co. Line to Sarasota/Manatee Co. Line	Fiber Optic Network	FON	CEI									$0.52			$0.52	Statewide	
138501	1	I-75	From Lee/Charlotte Co. Line to Charlotte/ Sarasota Co. Line	Freeway and Incident Management System	FMS	PE								$1.30				$1.30	Statewide	
138502	1	I-75	From Lee/Charlotte Co. Line to Charlotte/Sarasota Co. Line	Freeway and Incident Management System	FMS	CONST								$6.51				$6.51	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
138503	1	I-75	From Lee/Charlotte Co. Line to Charlotte/Sarasota Co. Line	Freeway and Incident Management System	FMS	CEI								$0.78				$0.78	Statewide	
2020621	1	I-75	From Lee/ Charlotte County Line to Manatee/Hillsborough County Line	I-75 Incident Management Project Plan for Charlotte, Sarasota and Manatee Counties	FMS	Planning	$0.50											$0.50	District	Initially showing PE phase updated to planning in order to be consistent with Work Program
2133061	2		From Jacksonville TMC to Jacksonville TMC	Jax ITS/Phase-1 Traffic Center Building	FMS	CONST	$0.11											$0.11	District	
204401	2	I-295	From I-10 to I-95 N	Incident Management System, Traveler Information, Management Center and Fiber	FMS	PE										$0.48		$0.48	Statewide	
204402	2	I-295	From I-10 to I-95 N	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CONST											$4.17	$4.17	Statewide	
204403	2	I-295	From I-10 to I-95 N	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CEI											$0.83	$0.83	Statewide	
204501	2	I-295	From I-95 S to I-10	Incident Management System, Traveler Information, Management Center and Fiber	FMS	PE									$0.73			$0.73	Statewide	
204502	2	I-295	From I-95 S to I-10	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CONST										$5.01		$5.01	Statewide	
204503	2	I-295	From I-95 S to I-10	Incident Management System, Traveler Information, Management Center and Fiber	FMS	CEI										$1.00		$1.00	Statewide	
237001	2	I-295	From I-10 to I-95N	Fiber Optic Network	FON	PE									$0.26			$0.26	Statewide	
237002	2	I-295	From I-10 to I-95N	Fiber Optic Network	FON	CONST										$2.25		$2.25	Statewide	
237003	2	I-295	From I-10 to I-95N	Fiber Optic Network	FON	CEI										$0.17		$0.17	Statewide	
237101	2	I-295	From I-95S to I-10	Fiber Optic Network	FON	PE									$0.37			$0.37	Statewide	
237102	2	I-295	From I-95S to I-10	Fiber Optic Network	FON	CONST										$3.22		$3.22	Statewide	
237103	2	I-295	From I-95S to I-10	Fiber Optic Network	FON	CEI										$0.26		$0.26	Statewide	
203901	2	I-95	From I-10 to Airport Road	Fiber Optic Network	FON	PE			$0.17									$0.17	Statewide	
203902	2	I-95	From I-10 to Airport Road	Fiber Optic Network	FON	CONST			$1.45									$1.45	Statewide	
203903	2	I-95	From I-10 to Airport Road	Fiber Optic Network	FON	CEI			$0.12									$0.12	Statewide	
204001	2	I-95	From I-10 to Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	PE			$0.15									$0.15	Statewide	
204002	2	I-95	From I-10 to Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CONST			$1.01									$1.01	Statewide	
204003	2	I-95	From I-10 to Trout River	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CEI			$0.20									$0.20	Statewide	
204101	2	I-95	From Trout River to Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	PE			$0.28									$0.28	Statewide	
204102	2	I-95	From Trout River to Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CONST			$0.86	$1.05								$1.91	Statewide	
204103	2	I-95	From Trout River to Airport/Duval Road	I-95 North ITS Improvements - Incident Management - cctvs, vehicle detection units,	FMS	CEI			$0.17	$0.21								$0.38	Statewide	
2132961	2	I-95	From I-295 S to I-10	Jacksonville Interstate Surveillance and Control System Phase 3	FMS	PE	$0.08											$0.08	District	
2132961	2	I-95	From I-295 S to I-10	Jacksonville Interstate Surveillance and Control System Phase 3	FMS	D/B		$6.62										$6.62	District	
308301	3	I-10		Pensacola Traffic Management Center Building	RTMC	PE						$0.14						$0.14	Statewide	
308302	3	I-10		Pensacola Traffic Management Center Building	RTMC	CONST						$1.95						$1.95	Statewide	
308303	3	I-10		Pensacola Traffic Management Center Building	RTMC	CEI						$0.39						$0.39	Statewide	
308402	3	I-10		Pensacola Traffic Management Center Systems	RTMC	CONST						$0.68						$0.68	Statewide	
313201	3	I-10		Tallahassee Regional Traffic Management Center Building	RTMC	PE							$0.14					$0.14	Statewide	
313202	3	I-10		Tallahassee Regional Traffic Management Center Building	RTMC	CONST							$2.00					$2.00	Statewide	
313203	3	I-10		Tallahassee Regional Traffic Management Center Building	RTMC	CEI							$0.40					$0.40	Statewide	
313302	3	I-10		Tallahassee Regional Traffic Management Center Systems	RTMC	CONST							$0.70					$0.70	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
321501	3	I-10	From Welcome Center to East of SR 87	Pensacola Area Freeway Management System	FMS	PE							$1.14					$1.14	Statewide	
321502	3	I-10	From Welcome Center to East of SR 87	Pensacola Area Freeway Management System	FMS	CONST							$7.58					$7.58	Statewide	This project covers the entire urban area of Pensacola along I-10.
321503	3	I-10	From Welcome Center to East of SR 87	Pensacola Area Freeway Management System	FMS	CEI							$1.52					$1.52	Statewide	
321701	3	I-10	From West of US 90 (Gadsden County) to East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	PE							$0.85					$0.85	Statewide	
321702	3	I-10	From West of US 90 (Gadsden County) to East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	CONST								$5.85				$5.85	Statewide	
321703	3	I-10	From West of US 90 (Gadsden County) to East of US 90 (Leon County)	Tallahassee Area Freeway Management System	FMS	CEI								$1.17				$1.17	Statewide	
336701	3	I-10	From US 90 West to US 90 East	Fiber Optic Network	FON	PE							$0.25					$0.25	Statewide	
336702	3	I-10	From US 90 West to US 90 East	Fiber Optic Network	FON	CONST							$2.12					$2.12	Statewide	
336703	3	I-10	From US 90 West to US 90 East	Fiber Optic Network	FON	CEI							$0.17					$0.17	Statewide	
336801	3	I-10	From Alabama State Line/I-10 Welcome Center to SR 87	Fiber Optic Network	FON	PE							$0.40					$0.40	Statewide	
336802	3	I-10	From Alabama State Line/I-10 Welcome Center to SR 87	Fiber Optic Network	FON	CONST							$3.32					$3.32	Statewide	
336803	3	I-10	From Alabama State Line/I-10 Welcome Center to SR 87	Fiber Optic Network	FON	CEI							$0.27					$0.27	Statewide	
307901	3	I-110	From I-10 to Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	PE							$0.40					$0.40	Statewide	
307902	3	I-110	From I-10 to Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	CONST							$2.67					$2.67	Statewide	This project includes the entire length of I-110.
307903	3	I-110	From I-10 to Pensacola Bay Bridge	I-110 Pensacola Area Freeway Management System	FMS	CEI							$0.53					$0.53	Statewide	
336901	3	I-110	From Pensacola Bay Bridge to I-10	Fiber Optic Network	FON	PE							$0.11					$0.11	Statewide	
336902	3	I-110	From Pensacola Bay Bridge to I-10	Fiber Optic Network	FON	CONST							$0.90					$0.90	Statewide	Project includes the entire length of I-110.
336903	3	I-110	From Pensacola Bay Bridge to I-10	Fiber Optic Network	FON	CEI							$0.07					$0.07	Statewide	
407501	4	I-595	From I-75 to U.S. 1	OVCS Variable Speed Zone	FMS	PE									$0.39			$0.39	Statewide	
407502	4	I-595	From I-75 to U.S. 1	OVCS Variable Speed Zone	FMS	CONST									$2.61			$2.61	Statewide	
407503	4	I-595	From I-75 to U.S. 1	OVCS Variable Speed Zone	FMS	CEI									$0.52			$0.52	Statewide	
2317051	4	I-595	From Eastern Terminus to Sawgrass Expressway	I-595 Broward County Changeable Message Sign System	ATIS	CONST	$1.45											$1.45	District	
401401	4	I-75	From Sawgrass Expressway to Broward/Collier Co Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE						$0.85						$0.85	Statewide	
401402	4	I-75	From Sawgrass Expressway to Broward/Collier Co Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST							$5.87					$5.87	Statewide	Funded in FIHS CFP
401403	4	I-75	From Sawgrass Expressway to Broward/Collier Co Line	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI							$1.17					$1.17	Statewide	
423301	4	I-75	From Southern Terminus to Sawgrass Expressway	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	PE						$1.68						$1.68	Statewide	
423302	4	I-75	From Southern Terminus to Sawgrass Expressway	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CONST						$5.60	$5.79					$11.39	Statewide	
423303	4	I-75	From Southern Terminus to Sawgrass Expressway	DMSS, ATIS, ARTS, CCTV at Interchanges, OVCS	FMS	CEI						$1.12	$1.16					$2.28	Statewide	
438301	4	I-75	From Sawgrass Expressway to Broward/Collier Co. Line	Fiber Optic Network	FON	PE						$0.55						$0.55	Statewide	
438302	4	I-75	From Sawgrass Expressway to Broward/Collier Co. Line	Fiber Optic Network	FON	CONST						$4.59						$4.59	Statewide	
438303	4	I-75	From Sawgrass Expressway to Broward/Collier Co. Line	Fiber Optic Network	FON	CEI						$0.37						$0.37	Statewide	
438401	4	I-75	From Southern Terminus to Sawgrass Expressway	Fiber Optic Network	FON	PE						$0.31						$0.31	Statewide	
438402	4	I-75	From Southern Terminus to Sawgrass Expressway	Fiber Optic Network	FON	CONST						$2.58						$2.58	Statewide	
438403	4	I-75	From Southern Terminus to Sawgrass Expressway	Fiber Optic Network	FON	CEI						$0.21						$0.21	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
4111961	4	I-75	From SR 826 to Broward/Collier Co. Line	I-75 ITS Corridor Plan	ATIS	PD& E	$0.31											$0.31	District	
407401	4	I-95	From Broward/Palm Beach Co. Line to Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	PE									$0.39			$0.39	Statewide	
407402	4	I-95	From Broward/Palm Beach Co. Line to Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	CONST										$2.69		$2.69	Statewide	FIHS CFP
407403	4	I-95	From Broward/Palm Beach Co. Line to Palm Beach/Martin Co. Line	OVCS Variable Speed Zone	FMS	CEI										$0.54		$0.54	Statewide	
2316541	4	I-95		Broward County I.T.S Operational Facility (TMC)	RTMC	PE	$0.35											$0.35	District	
2316541	4	I-95		Broward County I.T.S Operational Facility (TMC)	RTMC	CONST	$13.55											$13.55	District	
2316541	4	I-95		Broward County I.T.S Operational Facility (TMC)	RTMC	Utilities	$0.10											$0.10	District	
2316551	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	Advance Incident Information System (AIIS)	ATIS	PE	$1.31											$1.31	District	
2316551	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	Advance Incident Information System (AIIS)	ATIS	CONST			$11.26									$11.26	Statewide	
2316551	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	Advance Incident Information System (AIIS)	ATIS	Utilities	$0.10											$0.10	District	
2316591	4	I-95	From Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95 Broward County Changeable Message Sign	ATIS	CONST	$0.83											$0.83	District	
2316601	4	I-95	From Broward/Palm Beach Co Line to SR 869 Sawgrass Expressway	Broward County Freeway Video Monitoring System	FMS	CONST	$0.59											$0.59	District	
2317391	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595 Video Monitoring System Cameras Broward County	FMS	PE		$1.05										$1.05	District	
2317391	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595 Video Monitoring System Cameras Broward County	FMS	CONST				$10.67								$10.67	District	
2318811	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	SR 9/I-95/Video Monitoring System	FMS	CONST			$10.30									$10.30	Statewide	
2319301	4	I-95		Palm Beach County ITS Operations Facility	RTMC	PE	$1.05											$1.05	District	
2319301	4	I-95		Palm Beach County ITS Operations Facility	RTMC	CONST				$6.58								$6.58	Statewide	
2319301	4	I-95		Palm Beach County ITS Operations Facility	RTMC	PD& E	$1.05											$1.05	District	
4048181	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	Arterial Incident Detour Route Sign System	FMS	PE		$0.55										$0.55	District	
4048181	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	Arterial Incident Detour Route Sign System	FMS	CONST				$2.85								$2.85	District	
4048271	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Palm Beach County Dynamic Message Sign System (ATIS)	ATIS	PE	$0.08											$0.08	District	
4048271	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Palm Beach County Dynamic Message Sign System (ATIS)	ATIS	CONST		$4.98										$4.98	District	
4090471	4	I-95	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	Broward Co. APTS Master Plan	APTS	PD& E	$0.26											$0.26	District	
4110671	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Interim Traffic Management System (ITMS)	MOT	PE	$7.50											$7.50	Statewide	
4110671	4	I-95	From Broward/Palm Beach Co Line to Palm Beach/Martin Co. Line	Interim Traffic Management System (ITMS)	MOT	D/B		$3.20	$2.80	$2.80	$2.90	$3.00	$3.10	$3.20				$21.00	Statewide	
4124951	4	I-95	From Palm Beach/Martin Co. Line to Indian River/Brevard Co. Line	SR 9/I-95 Freeway Road Rangers Service Patrol	RR	MAINT				$1.10								$1.10	Statewide	
4125201	4	Various	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595/I-75 Lane Condition Priority System	FMS	PE				$0.40								$0.40	Statewide	
4125201	4	Various	From Miami-Dade/Broward Co. Line to Broward/Palm Beach Co Line	I-95/I-595/I-75 Lane Condition Priority System	FMS	CONST				$0.66								$0.66	Statewide	
503802	5	I-4	From SR 44 to I-95	I-4 Surveillance Motorist Information System Phase 5	FMS	CONST			$4.83									$4.83	Statewide	Needed to complete I-4/I-95 SMIS FON provided by a previous project.
503803	5	I-4	From SR 44 to I-95	I-4 Surveillance Motorist Information System Phase 5	FMS	CEI			$0.97									$0.97	Statewide	
2409482	5	I-4	From SR 44 to I-95	Integrate ITS in Volusia County	FMS	D/B	$0.15											$0.15	District	
2424442	5	I-4	From SR 528 to SR 482	I-4 Auxiliary Lanes from SR 528 to SR 482	FMS	CONST	$0.37											$0.37	District	
2424842	5	I-4	From SR 408 Interchange to	I-4 Interchange @ E/W Expressway Interim Improvements (SR 408)	FMS	CONST				$0.73								$0.73	District	
2424961	5	I-4	From SR 435 to Turnpike	I-4 Auxiliary Lanes from SR 435 to Turnpike	FMS	CONST	$0.22											$0.22	District	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
2424991	5	I-4	From SR 423 to SR 436	I-4 Auxiliary Lanes from SR 423 to SR 436	FMS	CONST	$5.50											$5.50	District	
2425231	5	I-4	From World Drive to US 27	I-4 SMIS (7 Miles) Phase 4 / 6- Lane Reconstruction Project	FMS	CONST		$2.00										$2.00	District	
2425311	5	I-4	From US 192 Interchange to	I-4 Interchange Freeway Management System	FMS	CONST			$1.29									$1.29	District	
2427021	5	I-4	From Lake Mary Blvd to SR 472	I-4 SMIS (22 Miles) Phase 3 - St. Johns River Bridge Replacement / Reconstruction	FMS	CONST	$3.00											$3.00	District	
4055151	5	I-4	From SR 536 to SR 528	I-4 Auxiliary Lanes from SR 536 to SR 528	FMS	CONST	$0.34											$0.34	District	
4107242	5	I-4	From SR 44 to DASH (I-95)	I-4 SMIS Fiber Optic Connection to DASH	FON	CONST		$0.56										$0.56	Statewide	
4107251	5	I-4		Regional Traffic Management Center (RTMC) Upgrade/ Retrofit	RTMC	D/B	$1.97											$1.97	District	
512701	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	PE					$1.03							$1.03	Statewide	
512702	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	CONST					$6.84							$6.84	Statewide	
512703	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler County Line	Surveillance Motorist Information System/Daytona Area Smart Highways Phase IV	FMS	CEI					$1.36							$1.36	Statewide	
512801	5	I-95	From SR 44 to US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	PE					$0.32							$0.32	Statewide	
512802	5	I-95	From SR 44 to US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	CONST					$2.10							$2.10	Statewide	
512803	5	I-95	From SR 44 to US 1 (Volusia County)	Surveillance Motorist Information System/Daytona Area Smart Highways PhaseIII	FMS	CEI					$0.42							$0.42	Statewide	
523901	5	I-95	From Indian River/Brevard Co. Line to SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	PE					$2.13							$2.13	Statewide	
523902	5	I-95	From Indian River/Brevard Co. Line to SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	CONST					$3.99	$7.00	$3.68					$14.67	Statewide	
523903	5	I-95	From Indian River/Brevard Co. Line to SR44	Surveillance Motorist Information System/Daytona Area Smart Highway Phase IV	FMS	CEI					$0.80	$1.25	$0.74					$2.79	Statewide	
540301	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	PE				$0.06								$0.06	Statewide	
540302	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	CONST				$0.42								$0.42	Statewide	
540303	5	I-95	From US 1 (Volusia County) to US 1 at the Flagler/St. Johns Co. Line	Fiber Optic Network	FON	CEI				$0.03								$0.03	Statewide	
540401	5	I-95	From Indian River/Brevard Co. Line to SR 44	Fiber Optic Network	FON	PE					$0.97							$0.97	Statewide	
540402	5	I-95	From Indian River/Brevard Co. Line to SR 44	Fiber Optic Network	FON	CONST					$8.07							$8.07	Statewide	
540403	5	I-95	From Indian River/Brevard Co. Line to SR 44	Fiber Optic Network	FON	CEI					$0.65							$0.65	Statewide	
540501	5	I-95	From SR 44 to US 1 (Volusia County)	Fiber Optic Network	FON	PE				$0.26								$0.26	Statewide	
540502	5	I-95	From SR 44 to US 1 (Volusia County)	Fiber Optic Network	FON	CONST				$2.17								$2.17	Statewide	
540503	5	I-95	From SR 44 to US 1 (Volusia County)	Fiber Optic Network	FON	CEI				$0.17								$0.17	Statewide	
2422501	5	I-95	From SR 528 & I-95 Interchange to	I-95 phase 2 I-95/SR 528 Hurricane Evacuation System	FMS	D/B	$0.66											$0.66	District	
2422501	5	I-95	From SR 528 & I-95 Interchange to	I-95 Phase 2 I-95/SR 528 Hurricane Evacuation System	FMS	D/B	$3.00											$3.00	Statewide	
4701	5	Various		ITS-01:OOCEA's SR 408 & SR 417	FMS	PE	$0.24											$0.24	Expwy Auth	Coms on OOCEA's FON
4702	5	Various	From Kirkman Road to SR 417 West	ITS-01:OOCEA's SR 408 & SR 417	FMS	CONST	$2.42											$2.42	Expwy Auth	Coms on OOCEA's FON
4901	5	Various		ITS-02: OOCEA's SR 408, SR 417, & SR 528	FMS	PE	$0.16											$0.16	Expwy Auth	Coms on OOCEA's FON: Costs in SR 408 section 1 entry for ITS-3
4902	5	Various		ITS-02: OOCEA's SR 408, SR 417, & SR 528	FMS	CONST		$1.60										$1.60	Expwy Auth	Coms on OOCEA's FON: Costs in SR 408 section 1 entry for ITS-3
5401	5	Various		ITS-03: OOCEA's SR 408, SR 417, & SR 528	FMS	PE	$0.30											$0.30	Expwy Auth	Coms on OOCEA's FON
5402	5	Various		ITS-03: OOCEA's SR 408, SR 417, & SR 528	FMS	CONST		$3.03										$3.03	Expwy Auth	Coms on OOCEA's FON: Costs in SR 408 entry for ITS-4
5601	5	Various		ITS-04: OOCEA's SR 408, SR 417, & SR 528	FMS	PE		$0.33										$0.33	Expwy Auth	Coms on OOCEA's FON

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Programmed Projects

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5602	5	Various		ITS-04: OOCEA's SR 408, SR 417, & SR 528	FMS	CONST		$3.32										$3.32	Expwy Auth	Coms on OOCEA's FON
5801	5	Various		ITS-05: OOCEA's SR 408, SR 417, SR 528, SR 520, & SR 50	FMS	CONST			$2.82									$2.82	Expwy Auth	Coms on OOCEA's FON
5802	5	Various		ITS-05: OOCEA's SR 408, SR 417, SR 528, SR 520, & SR 50	FMS	PE			$0.28									$0.28	Expwy Auth	Coms on OOCEA's FON
6301	5	Various		ITS-06: Traveler Information	ATIS	PE			$0.13									$0.13	Expwy Auth	
6302	5	Various		ITS-06: Traveler Information	ATIS	CONST			$1.35									$1.35	Expwy Auth	
6401	5	Various		ITS-07: Phase I System Automation	FMS	PE				$0.32								$0.32	Expwy Auth	Coms on OOCEA's FON
6402	5	Various		ITS-07: Phase I System Automation	FMS	CONST				$0.75								$0.75	Expwy Auth	Coms on OOCEA's FON
2502383	6			ITS Building/Comm. HUB Equipment Purchase (RTMC)	FMS	Capital			$0.10									$0.10	Statewide	
2516831	6	I-195	From NW 11 Avenue to SR 907/Alton Road	SR 112/I-195 ITS	FMS	PE			$0.05									$0.05	District	
2516831	6	I-195	From NW 11 Avenue to SR 907/Alton Road	SR 112/I-195 ITS	FMS	D/B				$7.76								$7.76	District	
2516861	6	I-395	From I-95 to West end of MacArthur Bridge	SR 836/I-395 ICS	FMS	PE					$0.35							$0.35	District	
2516851	6	I-75	From SR 826 to Miami-Dade/ Broward Co. Line	SR 93/I-75 ICS	FMS	PE	$0.01	$0.05										$0.05	District	
2516851	6	I-75	From SR 826 to Miami-Dade/ Broward Co. Line	SR 93/I-75 ICS	FMS	D/B				$10.23								$10.23	District	
2502381	6	I-95	From Sunguide RTMC to Sunguide RTMC	I-95 ITS Sunguide Control-Package "C"	FMS	Contract Incentives	$0.50											$0.50	District	Included Contract IncentivesPhase in order to be consistent with Work Program
2502381	6	I-95	From Sunguide RTMC to Sunguide RTMC	I-95 ITS Sunguide Control-Package "C"	FMS	CONST	$0.59											$0.59	District	
2516711	6	I-95	From US 1 to Miami-Dade/Broward County Line	I-95 Post Construction, Operations and Evaluation for Golden Glades Integration Project	FMS	CONST	$0.11											$0.11	District	
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	Contract Incentives			$1.50									$1.50	Statewide	Included Contract Incentives Phase in order to be consistent with Work Program
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	PE	$0.51											$0.51	District	
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	CONST	$3.90											$3.90	Statewide	
2516821	6	I-95	From US 1 to Ives Dairy Road	I-95 Intelligent Corridor System Package B	FMS	CONST	$17.04											$17.04	District	
4040801	6	I-95	From US 1 to Miami-Dade/ Broward Co. Line	SR 9A/I-95 Post Construction Evaluation	FMS	CEI	$0.51											$0.51	District	
4056631	6	I-95	From Sunguide ATIS to Sunguide ATIS	Miami-Dade Countywide Regional Traveler Information	ATIS	PE	$3.11											$3.11	District	
2497192	6	SR 826	From NW 154th Street to Golden Glades Interchange	SR 826 (Palmetto Expwy) East/West ITS Deployment	FMS	PE	$0.03											$0.03	District	
2497192	6	SR 826	From NW 154th Street to Golden Glades Interchange	SR 826 (Palmetto Expwy) East/West ITS Deployment	FMS	D/B	$3.02											$3.02	District	
1001802	6	SR 836	From SR 821 to NW 27th Ave	ITS - 002	FMS	CONST	$1.40											$1.40	Expwy Auth	Shown on map as MDX-1.
2502382	6	Various	From Sunguide RTMC to Sunguide RTMC	Package C- ITS Video Wall and Consoles	FMS	CONST			$3.38									$3.38	Statewide	
140601	7	I-275	From I-75 South to Sunshine Skyway Bridge	Fiber Optic Network	FON	PE									$0.10			$0.10	Statewide	
140602	7	I-275	From I-75 South to Sunshine Skyway Bridge	Fiber Optic Network	FON	CONST										$0.98		$0.98	Statewide	
140603	7	I-275	From I-75 South to Sunshine Skyway Bridge	Fiber Optic Network	FON	CEI										$0.08		$0.08	Statewide	
702001	7	I-275	From Bearss Ave to I-75	Freeway and Incident Management System	FMS	PE					$0.44							$0.44	Statewide	
702002	7	I-275	From Bearss Ave to I-75	Freeway and Incident Management System	FMS	CONST					$2.67							$2.67	Statewide	
702003	7	I-275	From Bearss Ave to I-75	Freeway and Incident Management System	FMS	CEI					$0.59							$0.59	Statewide	
737802	7	I-275	From South of Sunshine Skyway Bridge to McKinley Drive	Communication Link for Sunshine Skyway Bridge to FHP	FON	CONST		$5.73	$2.65									$8.38	Statewide	Cost revised to coincide with FHWA ITS Deployment plan.
737901	7	I-275	From Fowler Ave to Bearss Ave	Fiber Optic Network	FON	PE		$0.03										$0.03	Statewide	

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Programmed Projects

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737902	7	I-275	From Fowler Ave to Bearss Ave	Fiber Optic Network	FON	CONST			$0.29									$0.29	Statewide	
737903	7	I-275	From Fowler Ave to Bearss Ave	Fiber Optic Network	FON	CEI			$0.02									$0.02	Statewide	
743301	7	I-275	From Howard Frankland Bridge to Hillsborough River	Links II/III	FMS	PE						$0.24						$0.24	Statewide	
743302	7	I-275	From Howard Frankland Bridge to Hillsborough River	Links II/III	FMS	CONST									$2.74			$2.74	Statewide	See Note 1.
743303	7	I-275	From Howard Frankland Bridge to Hillsborough River	Links II/III	FMS	CEI									$0.39			$0.39	Statewide	See Note 1.
743401	7	I-275	From Bearss Ave to I-75	Fiber Optic Network	FON	PE					$0.11							$0.11	Statewide	
743402	7	I-275	From Bearss Ave to I-75	Fiber Optic Network	FON	CONST					$0.91							$0.91	Statewide	
743403	7	I-275	From Bearss Ave to I-75	Fiber Optic Network	FON	CEI					$0.07							$0.07	Statewide	
2583981	7	I-275	From Howard Frankland Bridge to Himes Ave	Links Stage II	FON	CONST						$1.30						$1.30	Statewide	
2583991	7	I-275	From Himes Ave. to Hillsborough River	Links Stage III	FON	CONST						$1.30						$1.30	Statewide	
2586431	7	I-275	From I-275 and I-4 Interchange to	ITS at I-4/I-275 Interchange	FMS	MOT			$1.10									$1.10	District	
2586432	7	I-275	From Hillsborough River to I-4	I-275/I-4 Freeway Management System	FMS	PE		$0.33										$0.33	District	
2586432	7	I-275	From Hillsborough River to I-4	I-275/I-4 Freeway Management System	FMS	CONST				$1.10								$1.10	Statewide	
4072331	7	I-275	From MLK Blvd to Bearss Ave	I-275 Freeway Management System	FMS	PE		$0.20										$0.20	District	
4072331	7	I-275	From MLK Blvd to Bearss Ave	I-275 Freeway Management System	FMS	CONST				$2.67								$2.67	Statewide	
4072332	7	I-275	From 54th Ave N to Howard Frankland	I-275 Freeway Management System	FMS	PE		$0.40										$0.40	District	
4072332	7	I-275	From 54th Ave N to Howard Frankland	I-275 Freeway Management System	FMS	CONST				$3.69								$3.69	Statewide	
4072333	7	I-275	From Howard Frankland to Kennedy Blvd	I-275 Freeway Management System	FMS	CONST				$0.32								$0.32	Statewide	
4072334	7	I-275	From 54th Ave S to 54th Ave N	I-275/Freeway Management System	FMS	PE			$0.30									$0.30	Statewide	
4072334	7	I-275	From 54th Ave S to 54th Ave N	I-275 Freeway Management System	FMS	CONST						$2.69						$2.69	Statewide	
4072335	7	I-275	From Sunshine Skyway Bridge to 54th Ave S	I-275 Freeway Management System	FMS	PE				$0.40								$0.40	Statewide	
4072335	7	I-275	From Sunshine Skyway to 54th Ave. South	I-275 Freeway Management System	FMS	CONST								$2.77				$2.77	Statewide	See Note 1 and 2.
4072336	7	I-275	From I-75 South to Sunshine Skyway	I-275 Freeway Management System	FMS	CONST											$2.02	$2.02	Statewide	See Note 1 and 2.
4086711	7	I-275	From Sunshine Skyway Bridge North End to Sunshine Skyway Bridge South	Skyway Video Monitoring System Modifications	ATIS	D/B	$1.64											$1.64	District	
740201	7	I-4	From I-275 to US 27 (Polk County)	Fiber Optic Network	FON	PE			$0.93									$0.93	Statewide	Project added to provide FON backbone for programmed I-4 ITS projects.
740202	7	I-4	From I-275 to US 27 (Polk County)	Fiber Optic Network	FON	CONST			$4.64									$4.64	Statewide	Project added to provide FON backbone for programmed I-4 ITS projects.
740203	7	I-4	From I-275 to US 27 (Polk County)	Fiber Optic Network	FON	CEI			$0.37									$0.37	Statewide	Project added to provide FON backbone for programmed I-4 ITS projects.
2584012	7	I-4	From 14th St to 50th St	I-4 Freeway Management System	FMS	CONST				$1.10								$1.10	Statewide	
4093661	7	I-4	From 50th Street to CR 579	I-4Freeway Management System	FMS	PE		$0.20										$0.20	District	
4093661	7	I-4	From 50th Street to CR 579	I-4 Freeway Management System	FMS	CONST				$2.70								$2.70	Statewide	
4093662	7	I-4	From CR 579 to Park Road	I-4 Freeway Management System	FMS	PE			$0.40									$0.40	Statewide	
4093662	7	I-4	From CR 579 to Park Road	I-4 Freeway Management System	FMS	CONST					$4.10							$4.10	Statewide	
4093663	7	I-4	From Park Road to Hillsborough/Polk Co. Line	I-4 Freeway Management System	FMS	PE				$0.61								$0.61	District	
4093663	7	I-4	From Park Road to Hillsborough/Polk Co. Line	I-4 Freeway Management System	FMS	CONST						$1.28						$1.28	District	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
4093664	7	I-4	From Hillsborough/Polk Co. Line to US 27	I-4 Freeway Management System	FMS	PE			$0.10									$0.10	District	
4093664	7	I-4	From Hillsborough/Polk Co. Line to US 27	I-4 Freeway Management System	FMS	CONST						$5.10						$5.10	Statewide	
743701	7	I-75	From US 301 (Brandon) to SR 54	Fiber Optic Network	FON	PE								$0.68				$0.68	Statewide	
743702	7	I-75	From US 301 (Brandon) to SR 54	Fiber Optic Network	FON	CONST								$4.58				$4.58	Statewide	
743703	7	I-75	From US 301 (Brandon) to SR 54	Fiber Optic Network	FON	CEI								$0.29				$0.29	Statewide	
4072321	7	I-75	From Tampa RTMC to Tampa RTMC	Tampa Bay Sunguide Freeway Management Center and System	FMS	PE	$0.81											$0.81	Statewide	
4072321	7	I-75	From Tampa RTMC to Tampa RTMC	Tampa Bay Sunguide Freeway Management Center and System	FMS	CONST			$4.79	$1.09								$5.87	Statewide	
4109091	7	I-75	From US 301 to Fowler Ave	I-75 Freeway Management System	FMS	PE			$0.30									$0.30	District	
4109091	7	I-75	From US 301 to Fowler Ave	I-75 Freeway Management System	FMS	CONST					$4.90							$4.90	Statewide	
4109092	7	I-75	From Fowler Ave to Bruce B Downs Blvd	I-75 Freeway Management System	FMS	PE						$0.10						$0.10	Statewide	
4109092	7	I-75	From Fowler Ave. to Bruce B. Downs Blvd.	I-75 Freeway Management System	FMS	CONST								$1.89				$1.89	Statewide	See Note 1.
4109093	7	I-75	From Bruce B Downs Blvd to I-275(Pasco County)	I-75 Freeway Management System	FMS	PE						$0.32						$0.32	Statewide	
4109093	7	I-75	From Bruce B. Downs Blvd. to I-275 (Pasco Co.)	I-75 Freeway Management System	FMS	CONST								$1.56				$1.56	Statewide	See Note 1.
4109094	7	I-75	From I-275 to Hernando Co. Line	I-75 Freeway Management System	FMS	PE						$0.14						$0.14	Statewide	
4109094	7	I-75	From I-275 to Hernando Co. Line	I-75 Freeway Management System	FMS	CONST								$3.28				$3.28	Statewide	See Note 1.
4109095	7	I-75	From Pasco Co. Line to SR 50	I-75 Freeway Management System	FMS	PE						$0.10						$0.10	Statewide	
4109095	7	I-75	From Pasco Co. Line to SR 50	I-75 Freeway Management System	FMS	CONST										$0.67		$0.67	Statewide	See Note 1.
4109096	7	I-75	From Manatee Co. Line to US 301	I-75 Freeway Management System	FMS	PE						$0.21						$0.21	Statewide	
4109096	7	I-75	From Manatee Co. Line to US 301	I-75 Freeway Management System	FMS	CONST								$2.65				$2.65	Statewide	See Note 1.
4109097	7	I-75	From I-275 to Hillsborough Co. Line	I-75 (Freeway Management System	FMS	PE						$0.10						$0.10	Statewide	
4109097	7	I-75	From I-275 to Hillsborough Co. Line	I-75 Freeway Management System	FMS	CONST								$0.57				$0.57	Statewide	See Note 1.
2558441	7	SR 589	From I-275 to Hillsborough River	Links Stage I	FMS	CONST			$1.59									$1.59	Statewide	
2558442	7	SR 589	From I-275 to Hillsborough River	Links Stage I	FMS	PE			$0.20									$0.20	Statewide	
2558442	7	SR 589	From I-275 to Hillsborough River	Links Stage I	FMS	CONST					$1.70							$1.70	Statewide	
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	PE	$0.07											$0.07	District	
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	CONST		$9.24										$9.24	District	See Note 5
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	Utilities		$0.21										$0.21	District	
4122861	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Expressway	FMS	Capital		$0.95										$0.95	District	
4122871	8	Sawgrass	From Sawgrass Expressway Limits to Sawgrass Expressway Limits	Sunpass Challenge Sawgrass Ramps II	FMS	PE	$0.01											$0.01	District	
4122881	8	SR 570	From Polk Parkway Limits to Polk Parkway Limits	Sunpass Challenge Polk Parkway	FMS	PE	$0.00											$0.00	District	
4122881	8	SR 570	From Polk Parkway Limits to Polk Parkway Limits	Sunpass Challenge Polk Parkway	FMS	CONST		$2.33										$2.33	District	See Note 5
4122881	8	SR 570	From Polk Parkway Limits to Polk Parkway Limits	Sunpass Challenge Polk Parkway	FMS	Capital		$0.68										$0.68	District	
843802	8	SR 91	From MP 263 to MP 267	Ocoee Video System and Fiber Optics	FMS	CONST	$0.25											$0.25		Bidding proposed to occur in FY'03.
1907501	8	SR 91	From MP4 to MP 75	SunNav Phase 1 Fiber Project	FMS	CONST	$8.00	$3.70										$11.70	District	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
1907661	8	SR 91		SunNav sm Software Development and Integration	FMS	PE	$3.07	$5.08	$5.75	$6.07	$6.42	$6.72						$33.10	District	See Note 4
4061221	8	SR 91	From I-95 to I-75	Mainline Communication HUBS & Fiber Distribution Cable	COM	PE	$1.66											$1.66	District	
4061221	8	SR 91	From I-95 to I-75	Mainline Communication HUBS & Fiber Distribution Cable	COM	CONST			$12.46									$12.46	District	
4061221	8	SR 91	From I-95 to I-75	Mainline Communication HUBS & Fiber Distribution Cable	COM	Utilities			$0.50									$0.50	District	
4061231	8	SR 91	From Turnpike Mainline to	Intelligent Transportation System (ITS) Incident Detection	FMS	PE				$0.81								$0.81	District	
4061231	8	SR 91	From Turnpike Mainline to	Intelligent Transportation System (ITS) Incident Detection	FMS	CONST						$10.66						$10.66	District	
4090601	8	SR 91	From I-95 to I-75	Sunpass System Monitoring Expansion and CCTV equipment	FMS	Capital	$1.60	$1.40	$1.50	$1.50	$1.50	$2.00						$9.50	Statewide	
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	Right Of Way	$0.00											$0.00	District	Included Right Of Way Phase in order to be consistent with Work Program
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	PE	$0.53											$0.53	District	
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	CONST	$0.84											$0.84	District	
1907171	8	Various	From I-95 to I-75	Advanced Traveler Information System DMS, HAR , TMC's	FMS	Utilities	$1.07											$1.07	District	
	9	Central Office		ITS Central Office Consultants and Contingencies	FMS	PE		$7.90	$9.20	$8.40	$10.50	$8.63	$8.63	$7.32	$2.32	$3.31	$3.31	$69.51	Statewide	
915701	9	Central Office	Statewide	CVISN Phase I (Electronic Credentialing System & Automated Routing Software, Items 1-3)	CVISN	PE		$2.56										$2.56	Statewide	
915801	9	Central Office	Statewide	CVISN Phase II (Electronic Payment System and IFTA Clearing House, Items 4-10)	CVISN	PE			$1.08									$1.08	Statewide	
916601	9	Central Office	Statewide	Jacksonville Area SunGuide ATIS	ATIS	PE					$3.18							$3.18	Statewide	Public sector subsidy, private sector participation anticipated
918801	9	Central Office	Statewide	Southwest Florida ATIS	ATIS	PE					$3.00							$3.00	Statewide	Public sector subsidy, private sector participation anticipated
918901	9	Central Office	Statewide	Statewide 511 Services	ATIS	PE				$1.94								$1.94	Statewide	Public sector subsidy, private sector participation anticipated. Advanced 1 yr. To coincide with the 511 Implementation Plan.
924401	9	Central Office	Statewide	Statewide Highway Advisory Radio System Phase 1	ATIS	PE											$0.75	$0.75	Statewide	
924402	9	Central Office	Statewide	Statewide Highway Advisory Radio System Phase 1	ATIS	CONST											$4.98	$4.98	Statewide	
924403	9	Central Office	Statewide	Statewide Highway Advisory Radio System Phase 1	ATIS	CEI											$1.00	$1.00	Statewide	
930701	9	Central Office	Statewide	Statewide Road Weather Information System	ATIS	PE										$0.94		$0.94	Statewide	
930702	9	Central Office	Statewide	Statewide Road Weather Information System	ATIS	CONST										$3.14	$3.24	$6.38	Statewide	
930703	9	Central Office	Statewide	Statewide Road Weather Information System	ATIS	CEI										$0.63	$0.65	$1.28	Statewide	
939001	9	Central Office	Statewide	RTMC Software Library and Configuration Management	RTMC	PE		$1.40	$0.80	$0.60	$0.60	$0.17	$0.17	$0.18	$0.18	$0.19	$0.19	$4.48	Statewide	
4125431	9	I-4	Statewide	Tampa Bay SunGuide℠ ATIS	ATIS	PE		$5.00										$5.00	Statewide	

Table 5.8 - Ten-Year ITS Cost-Feasible Plan

Programmed Projects

FIN / MapID	District	Facility	Project Limits	Description	Type	Phase	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Total	Fund Source	Comments
						Total Statewide Manageed Funds (TSWMF)	$24.80	$21.40	$70.30	$65.60	$67.50	$55.30	$56.30	$50.00	$25.00	$30.00	$30.00	$496.20		
						Statewide Funds Programmed (S)	$18.21	$10.16	$38.12	$26.08	$15.10	$16.36	$3.10	$3.20	$0.00	$0.00	$0.00	$130.34		
						District Funds Programmed (D)	$81.69	$38.57	$21.55	$39.74	$6.77	$18.66	$0.00	$0.00	$0.00	$0.00	$0.00	$206.98		
						Other Programmed -Private (P)	$4.77	$8.28	$4.58	$1.07	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$18.69		
						Total Programmed (S+D+P)	$104.67	$57.01	$64.25	$66.89	$21.87	$35.03	$3.10	$3.20	$0.00	$0.00	$0.00	$356.02		
						Funds Available for CFP (TSWMF -S)	$6.59	$11.24	$32.18	$39.52	$52.40	$38.94	$53.20	$46.80	$25.00	$30.00	$30.00	$365.86		
						Cost-Feasible Projects (CFP)	$0.00	$17.61	$30.19	$38.40	$50.75	$38.31	$52.74	$46.14	$24.77	$29.87	$29.17	$357.95		
						Contingency as a % of TSWFA	27%	-30%	3%	2%	2%	1%	1%	1%	1%	0%	3%	2%		

** All projects costs shown are escalated or "as-programmed" millions of*

Note 1: District cost estimates are low compared to estimates performed by the Central Office. Central Office estimates are based on the FHWA device unit costs.

Note 2: Unable to advance project utilizing statewide managed funds. Project can be advanced utilizing district allocated funds.

Note 3: Project limits, costs, and the implementation year for fiber project subject to change based on phasing and implementation of FMS projects for the same facility and limits.

Note 4: Also includes non-ITS work such as burdened costs for traffic operations and administrative staff. traffic engineering, telecommunications, and administrative work; office expenses; and travel expenses.

Note 5:SunPass Challenge projects include toll booth construction, ramp widening and other non-ITS projects.

Figure 5.5 – District 2 Ten-Year ITS Cost-Feasible Plan

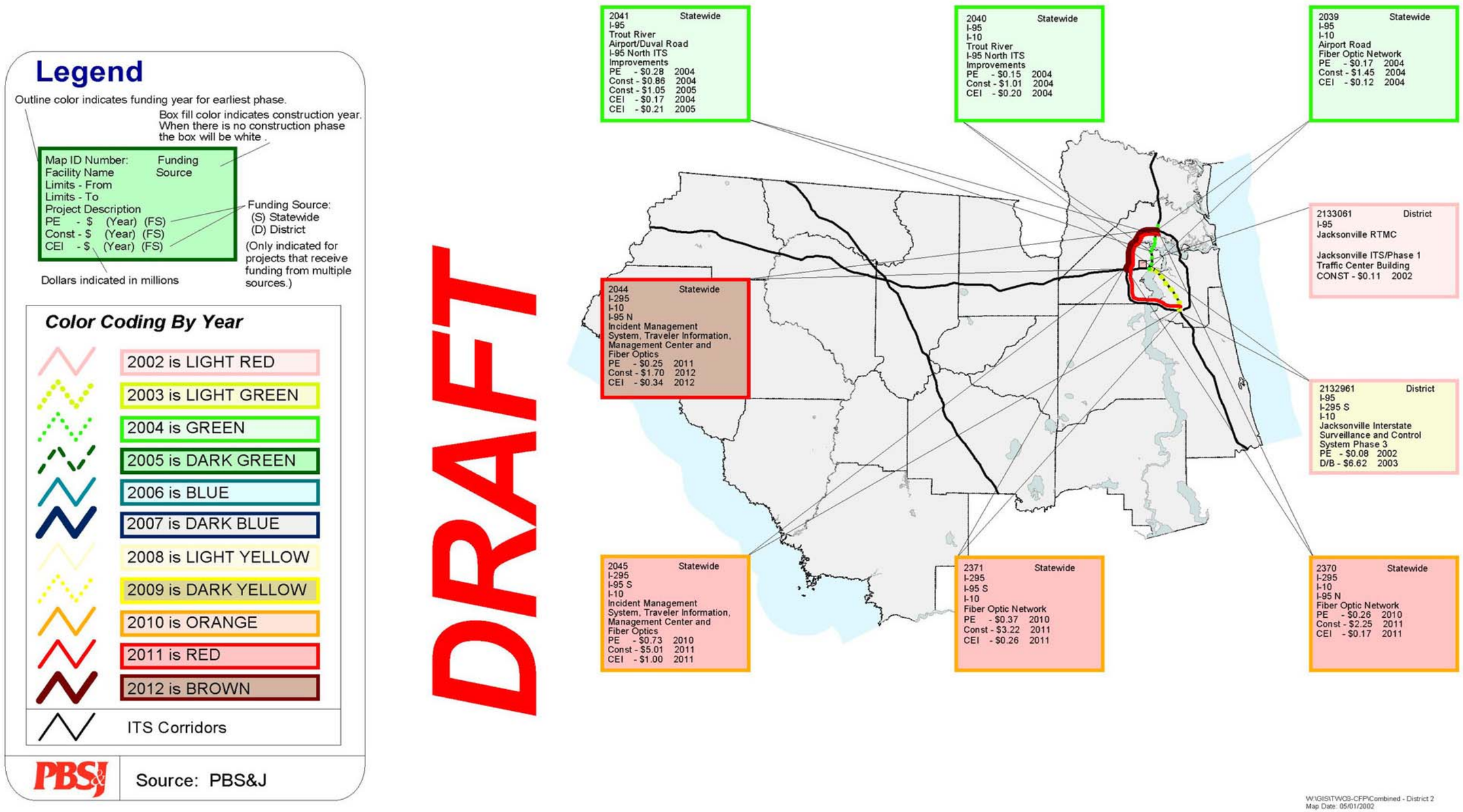


Figure 5.6 – District 4 Ten-Year ITS Cost-Feasible Plan

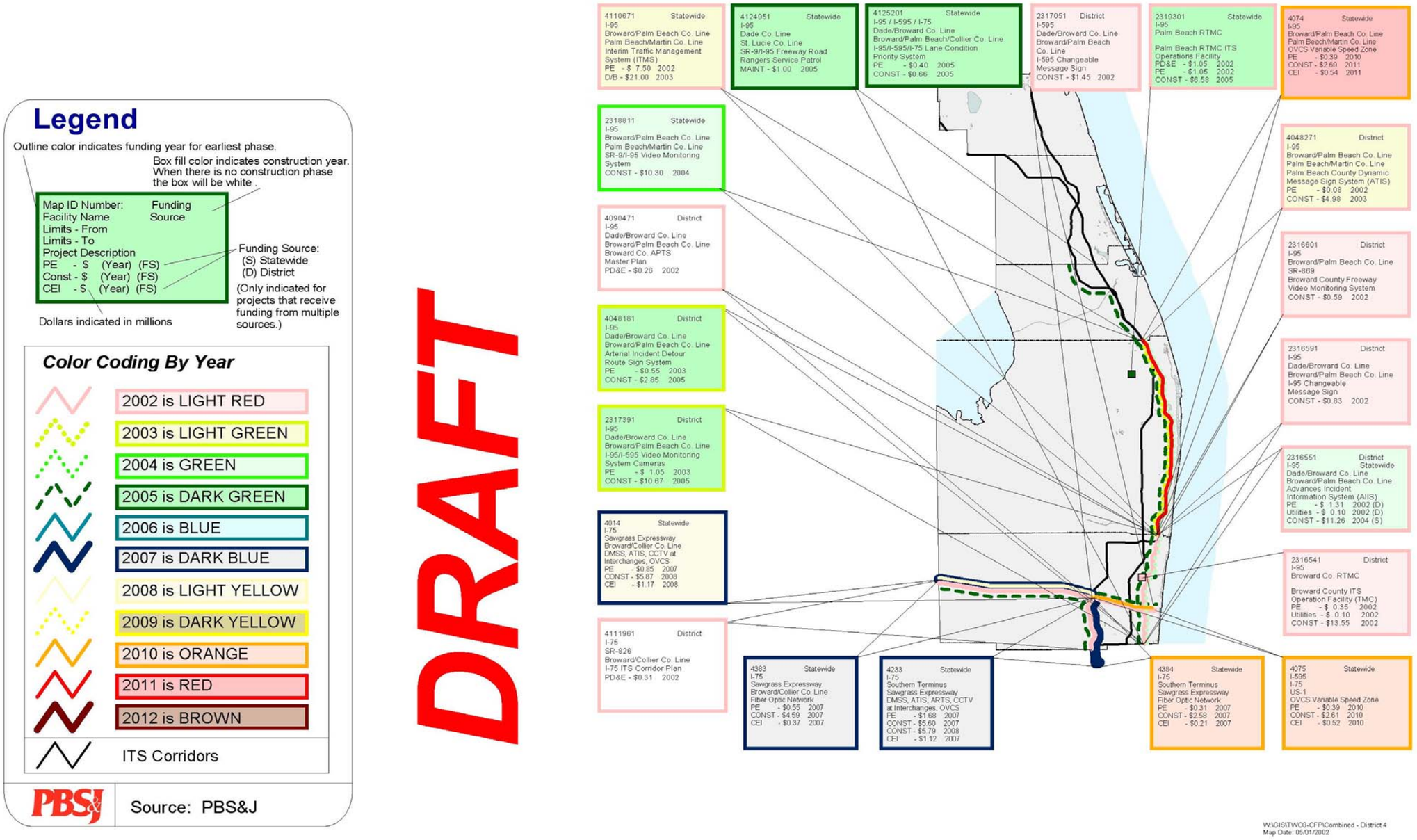


Figure 5.7 – District 5 Ten-Year ITS Cost-Feasible Plan

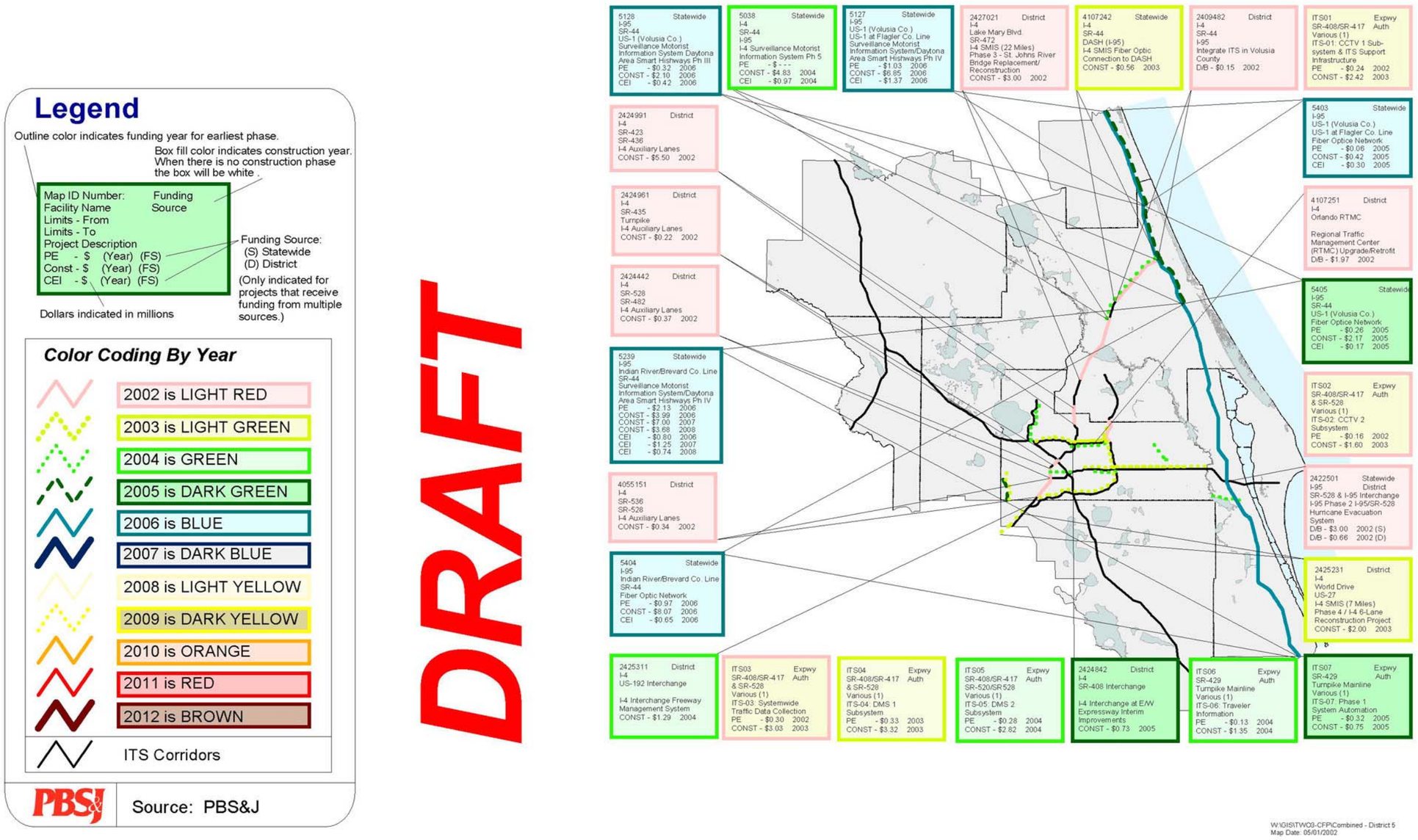
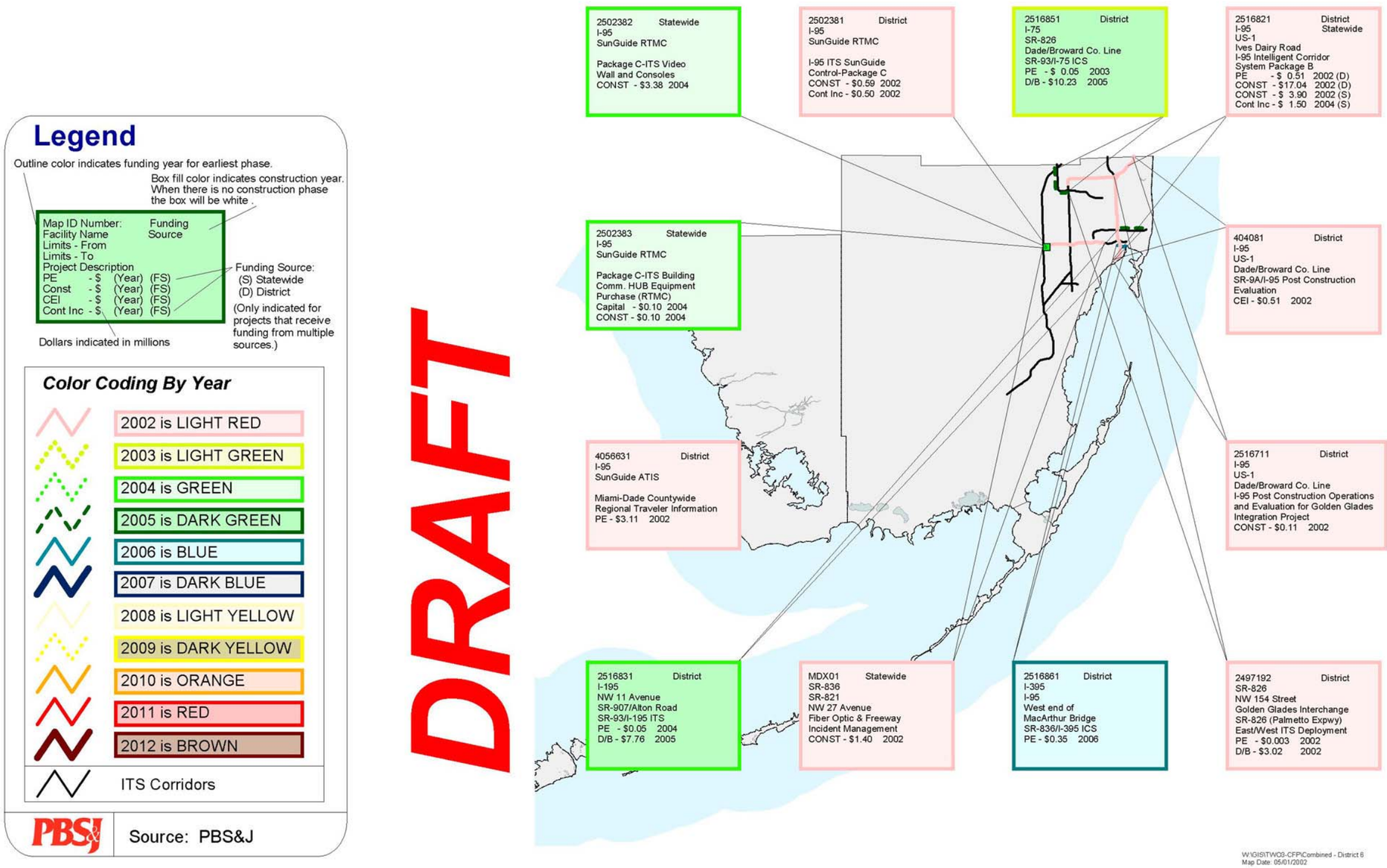


Figure 5.8 – District 6 Ten-Year ITS Cost-Feasible Plan



5.7 Anticipated Impacts

No adverse direct or secondary impacts are anticipated from the deployment of these ITS services. These improvements are eligible for a programmatic categorical exclusion under the 1969 National Environmental Policy Act as implemented by FDOT's Project Development and Environmental Manual.[2] The following summarizes factors to be considered in the application that is being made for these ITS deployments:

- No adverse impacts to local traffic patterns, property access, community cohesiveness, planned community growth, or land-use patterns are anticipated.
- No adverse impacts to air, noise, or water quality are anticipated.
- No wetland involvement is anticipated. There is sufficient flexibility in the siting of field devices in this program that devices can be relocated to avoid any impacts.
- No Coast Guard permits are required.
- No flood plain encroachments are anticipated.
- At the most, an insignificant amount of right-of-way is required for this project. There is sufficient flexibility in the siting of field devices in this program that devices can be relocated to avoid any impacts.
- No residential or business impacts are anticipated.
- No adverse impacts to properties registered as historic properties are anticipated.
- No contamination involvement is anticipated.
- The project does not require a public hearing or an opportunity for a public hearing.

During design and construction, the specific siting of these field devices will need to be evaluated and relocated, if necessary, to avoid or reduce any impacts. Since all of the deployments are planned to occur on FDOT-owned right-of-way, no adverse impacts are anticipated.

Additionally, exclusion from the NEPA, as proposed in this issue, does not exempt the project from permitting requirements. Some permitting may be required in instances where ITS devices are located outside of the FDOT-owned right-of-way.

[2] This eligibility has yet to be formally determined. However, an application for a programmatic categorical exclusion for this project and an issue paper documenting the relevant 23 CFR, 40 CFR, and guidance from the Council on Environmental Quality recommendations were provided to the ITS Office for coordination with FDOT's Environmental Management Office and FHWA.

6. Summary

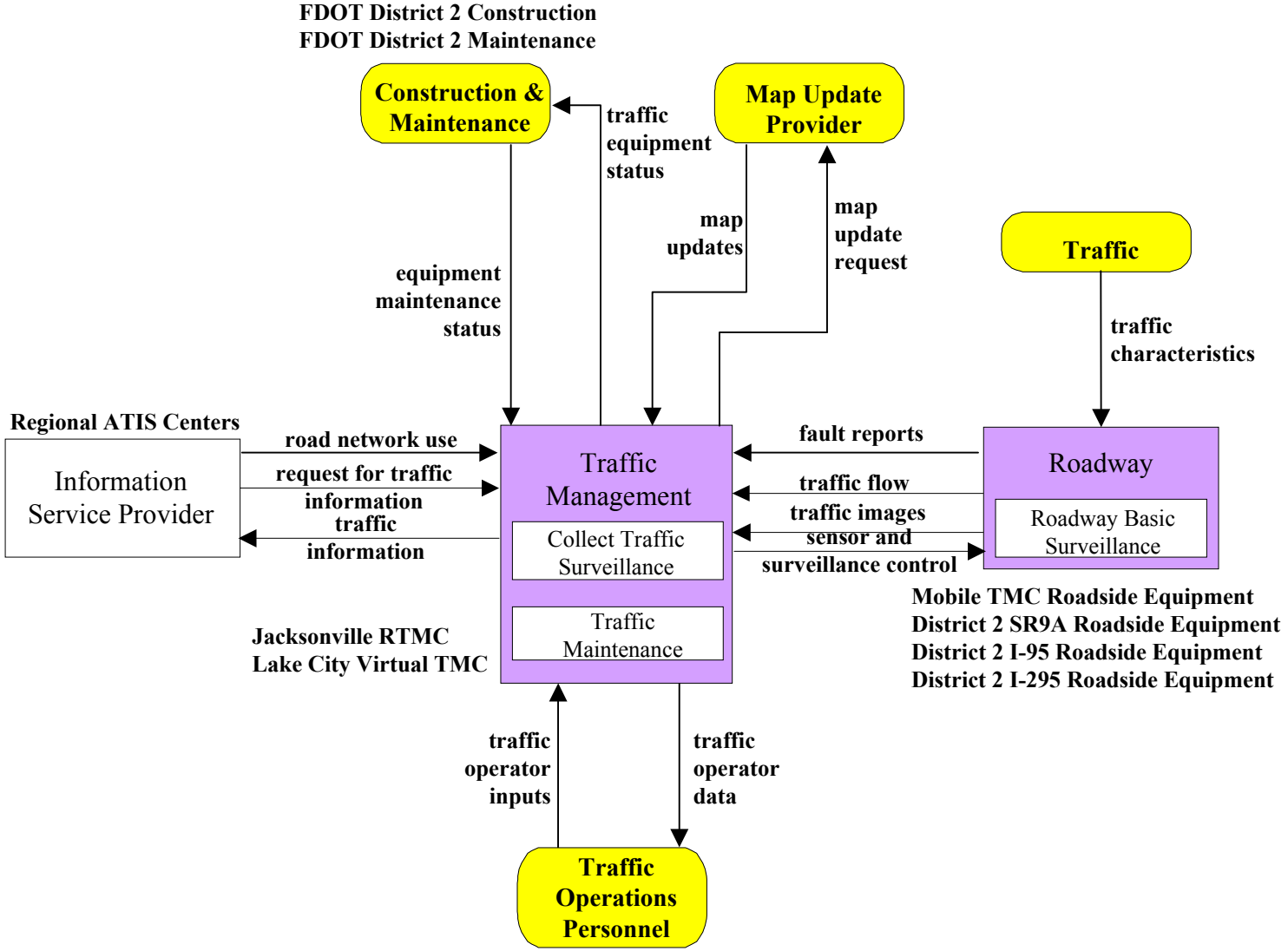
The I-95 corridor is primarily a four-lane rural corridor that traverses the Florida east coast area and includes the urbanized areas of Jacksonville, Palm Beach, and Miami. The corridor accommodates significant truck traffic and traffic volumes within the urban areas and exhibits a number of high accident locations, primarily in the rural areas.

The needs, issues, problems, and objectives established for the FIHS limited-access corridors identify a need to improve mobility, reduce congestion, and enhance safety and evacuation coordination in a efficient, cost effective manner, consistent with the goals of the *Florida Transportation Plan* and the mission and vision developed for statewide ITS deployments. Themes and strategies were recommended for deployment along these corridors that include the deployment of FMS and emergency service patrols, as recommended in this implementation plan.

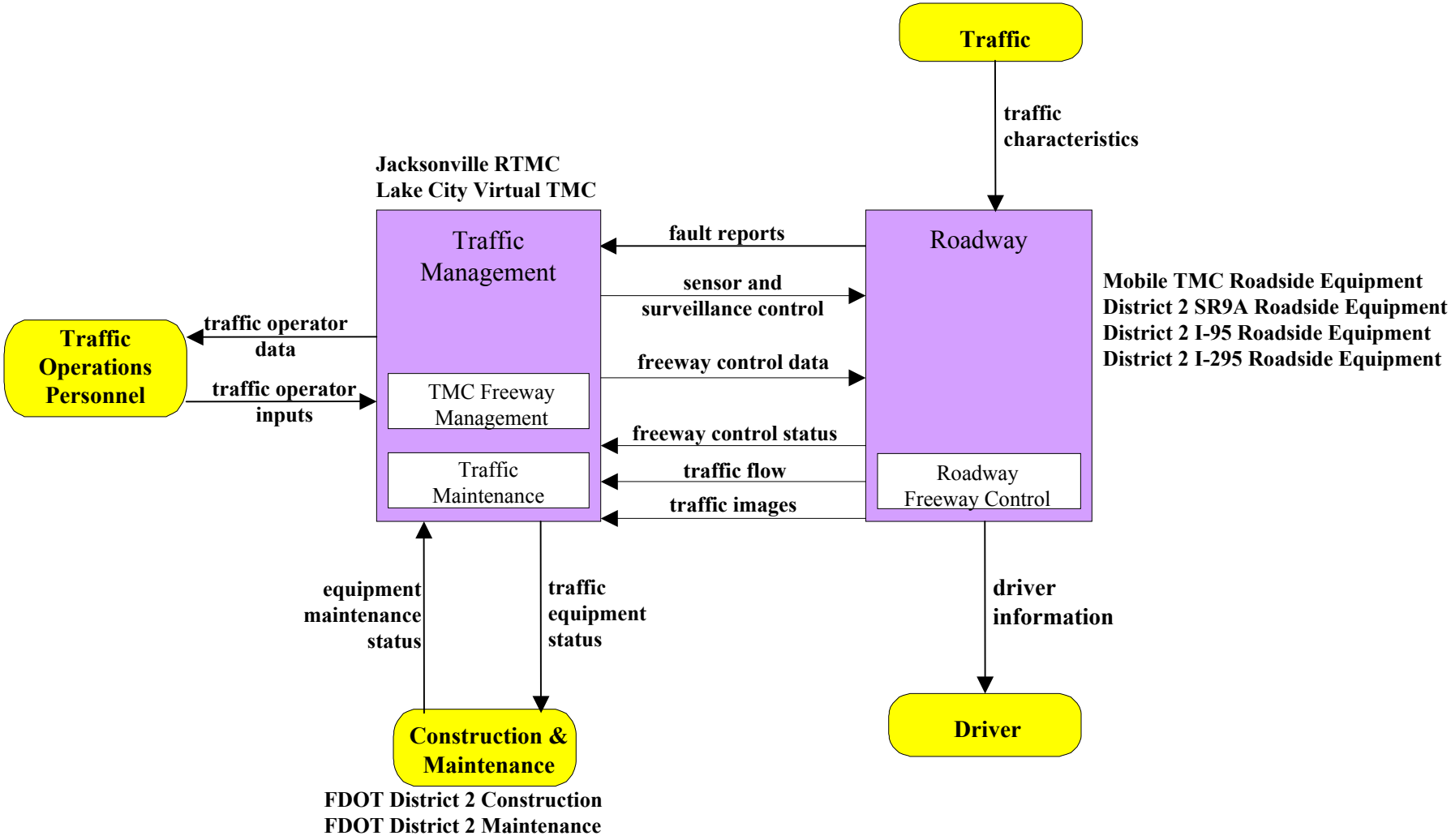
Appendix A

Market Package Diagrams

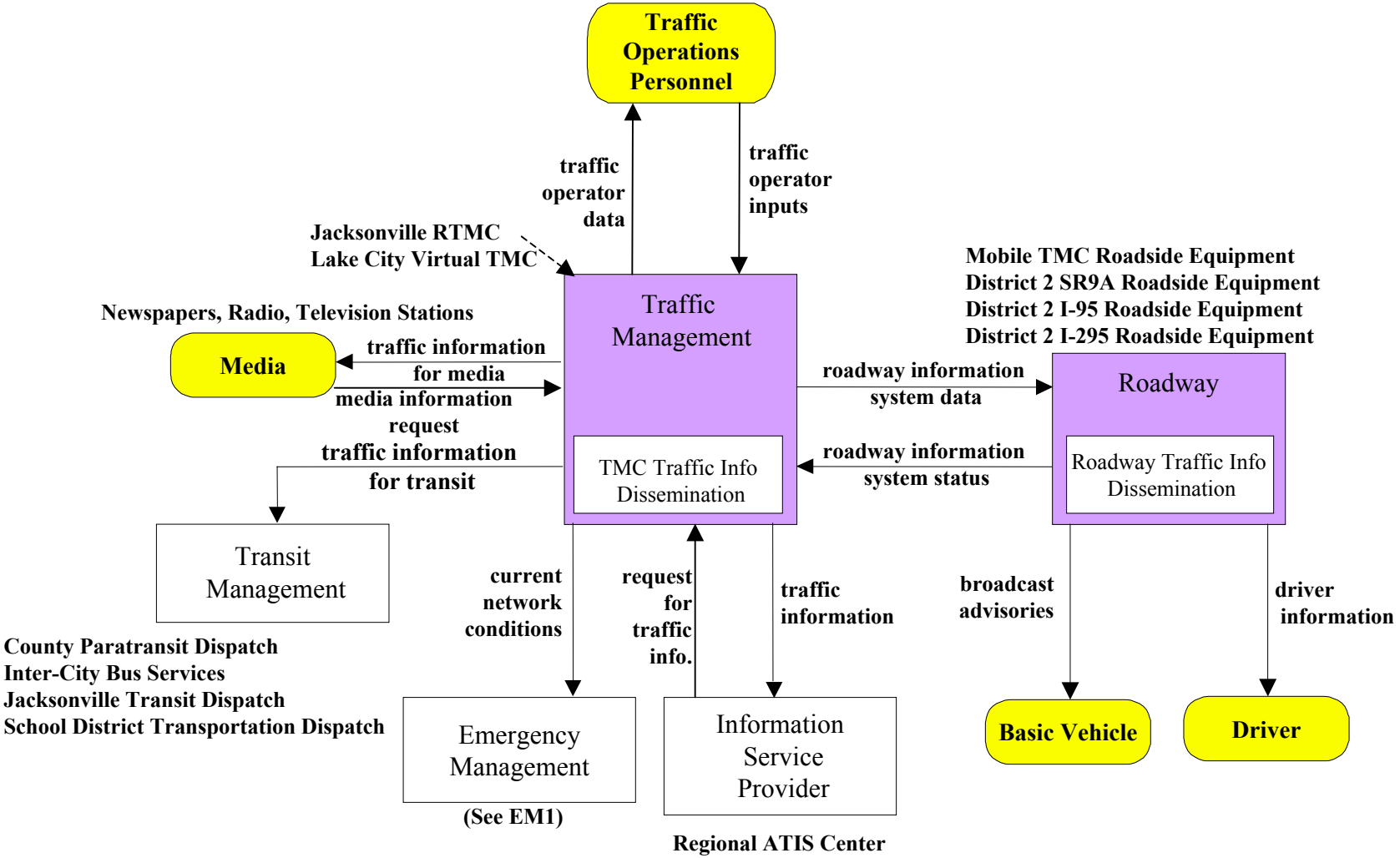
ATMS1 – Network Surveillance Market Package



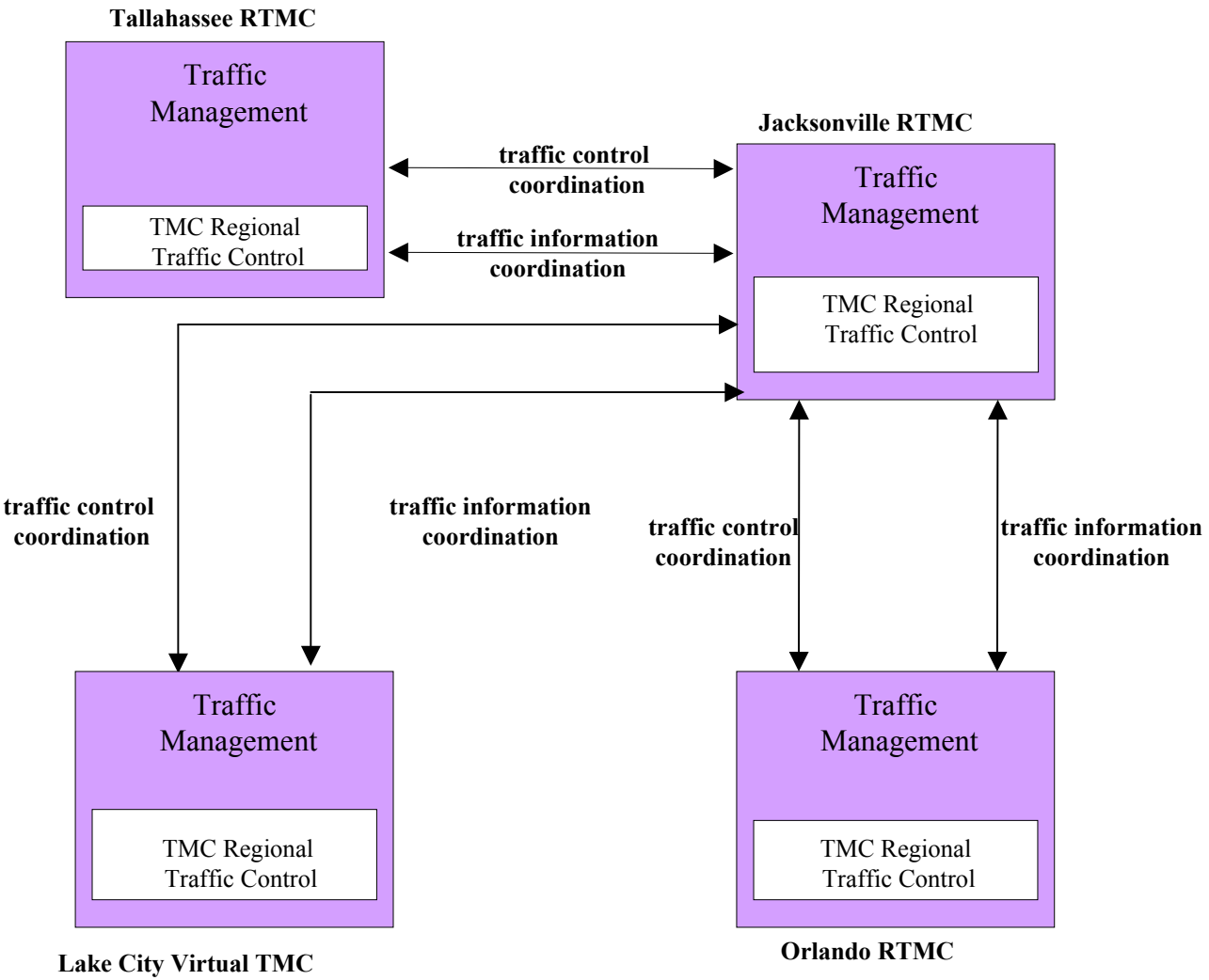
ATMS4 – Freeway Control Market Package



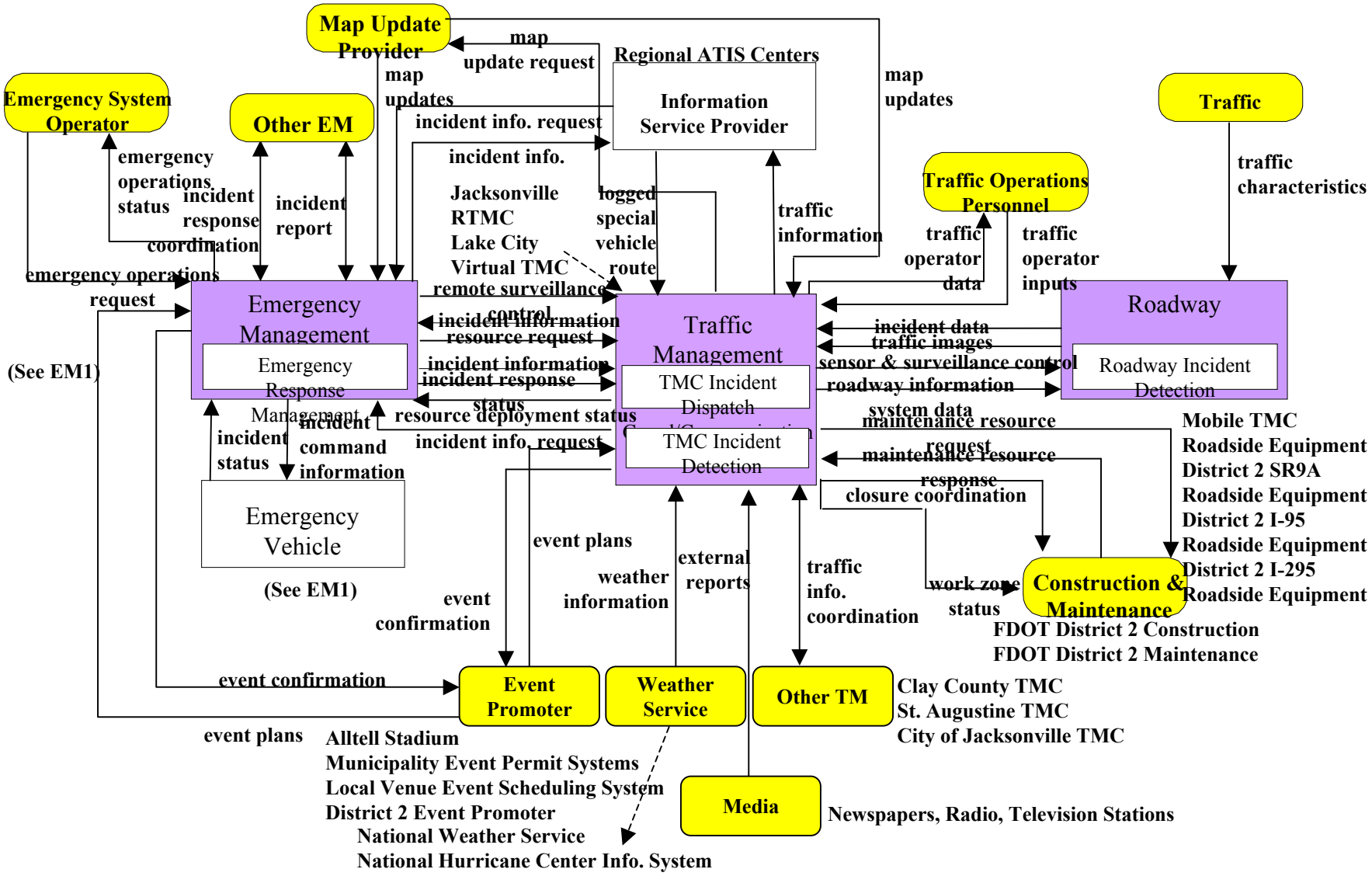
ATMS6 – Traffic Information Dissemination Market Package



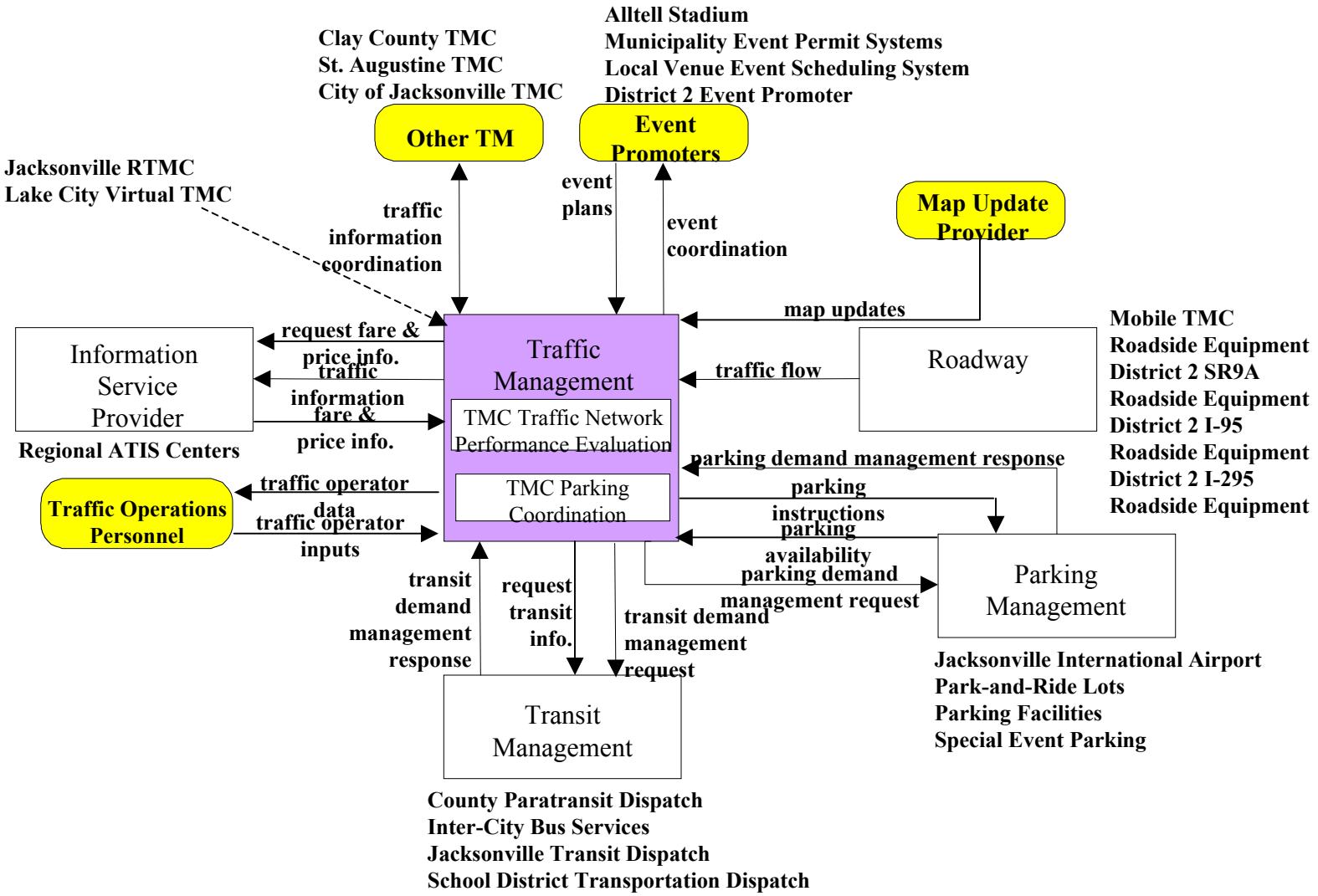
ATMS7 – Regional Traffic Control Market Package



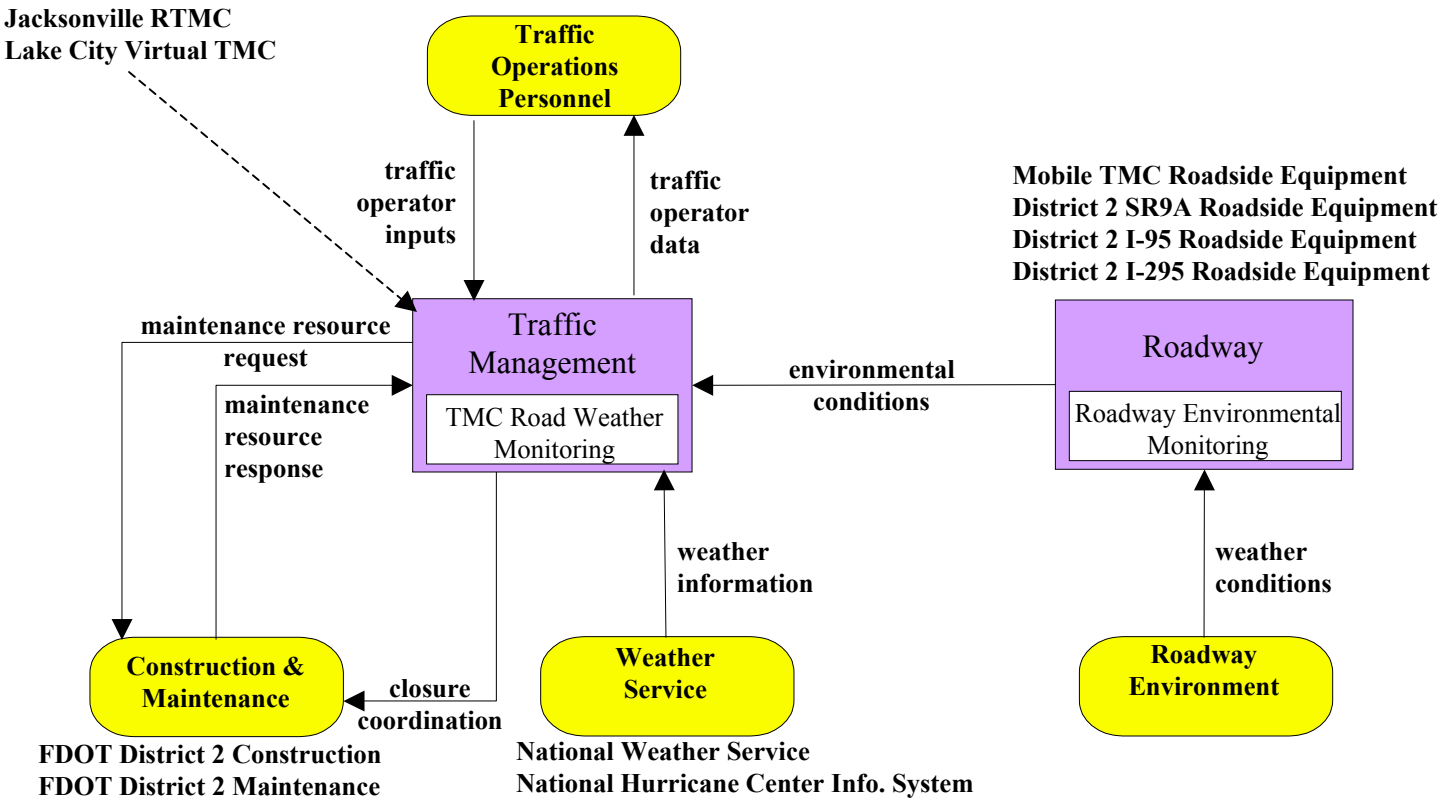
ATMS8 – Incident Management System Market Package



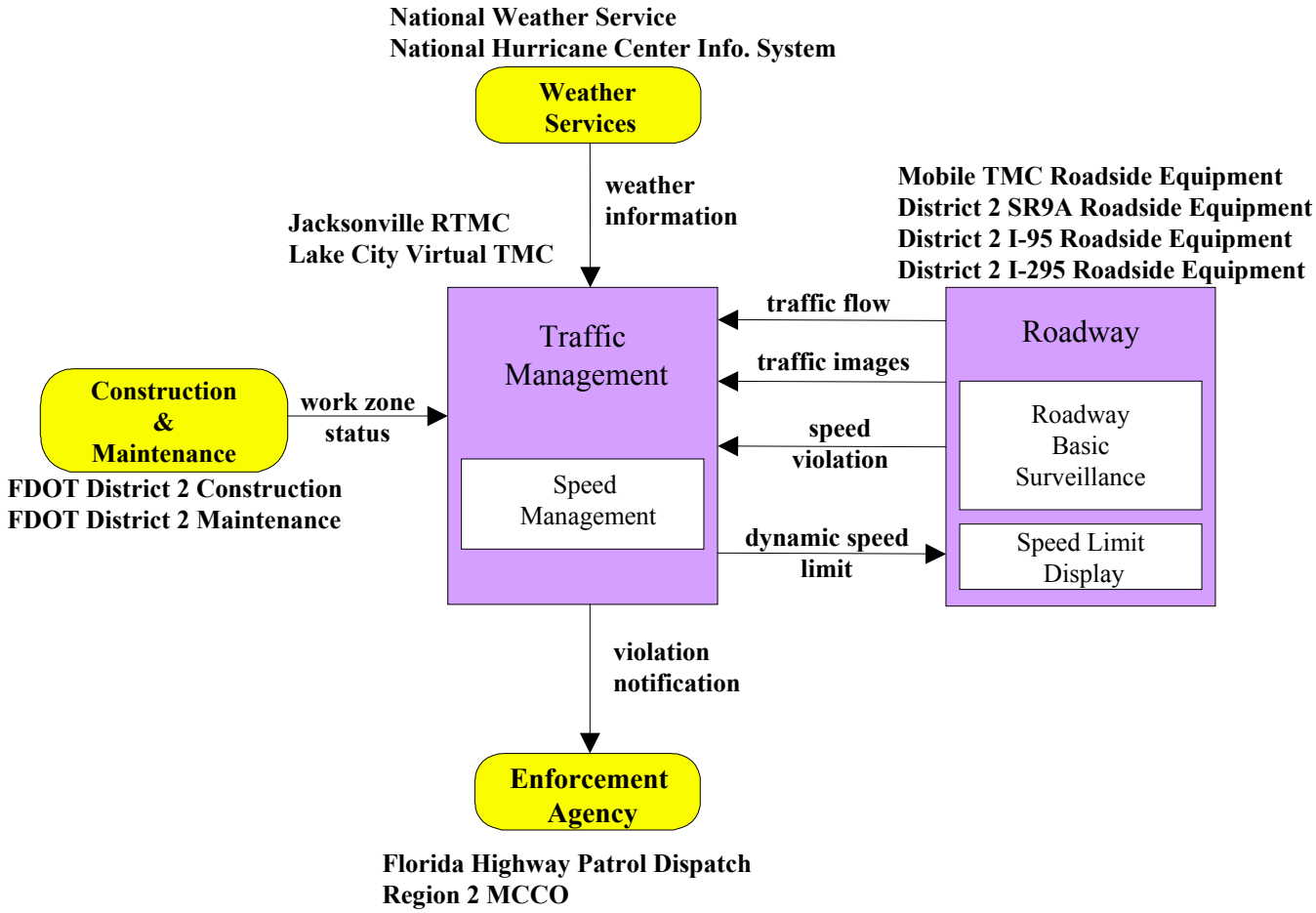
ATMS9 – Traffic Forecast and Demand Management Market Package



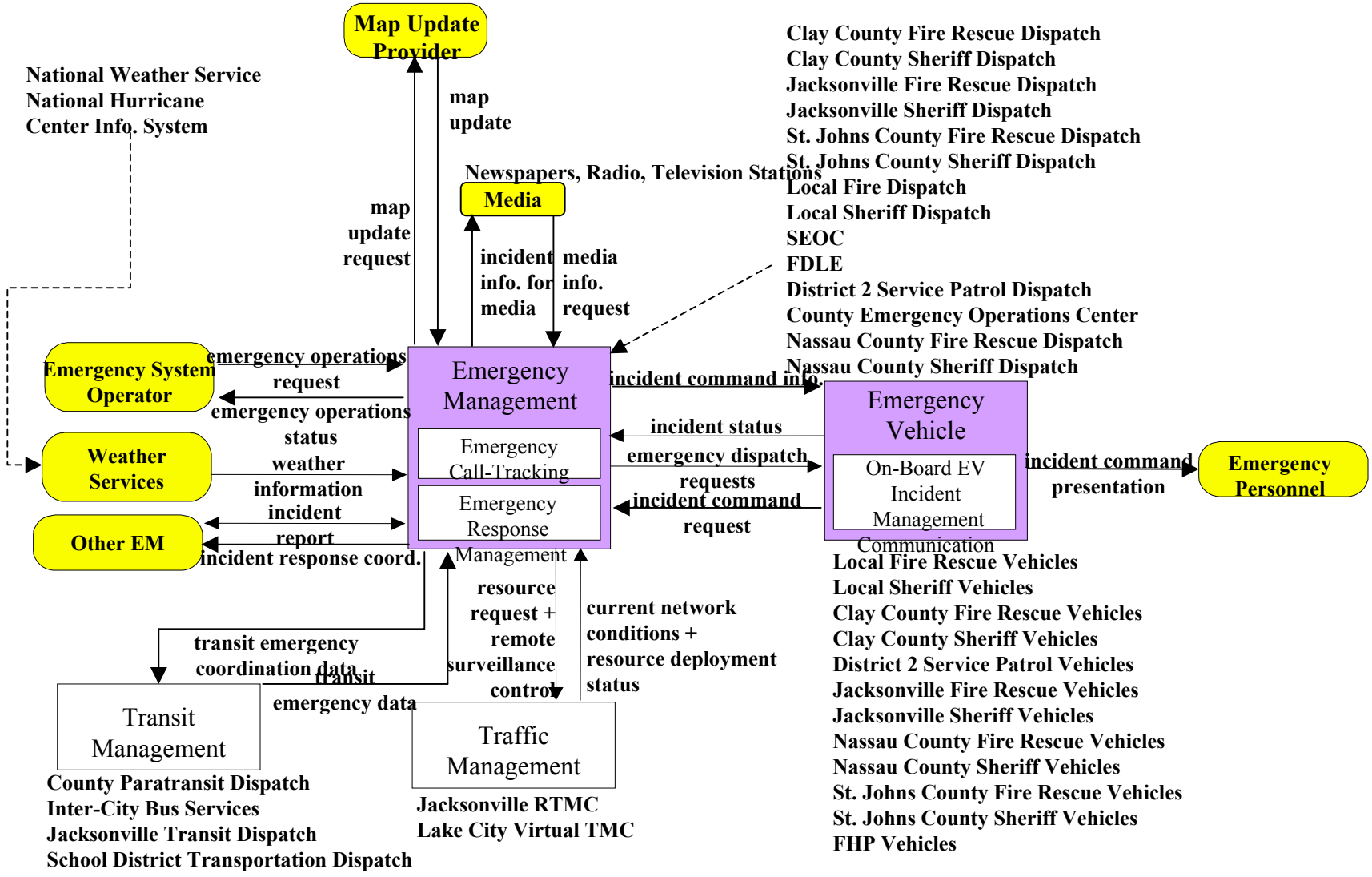
ATMS18 – Road Weather Information System Market Package



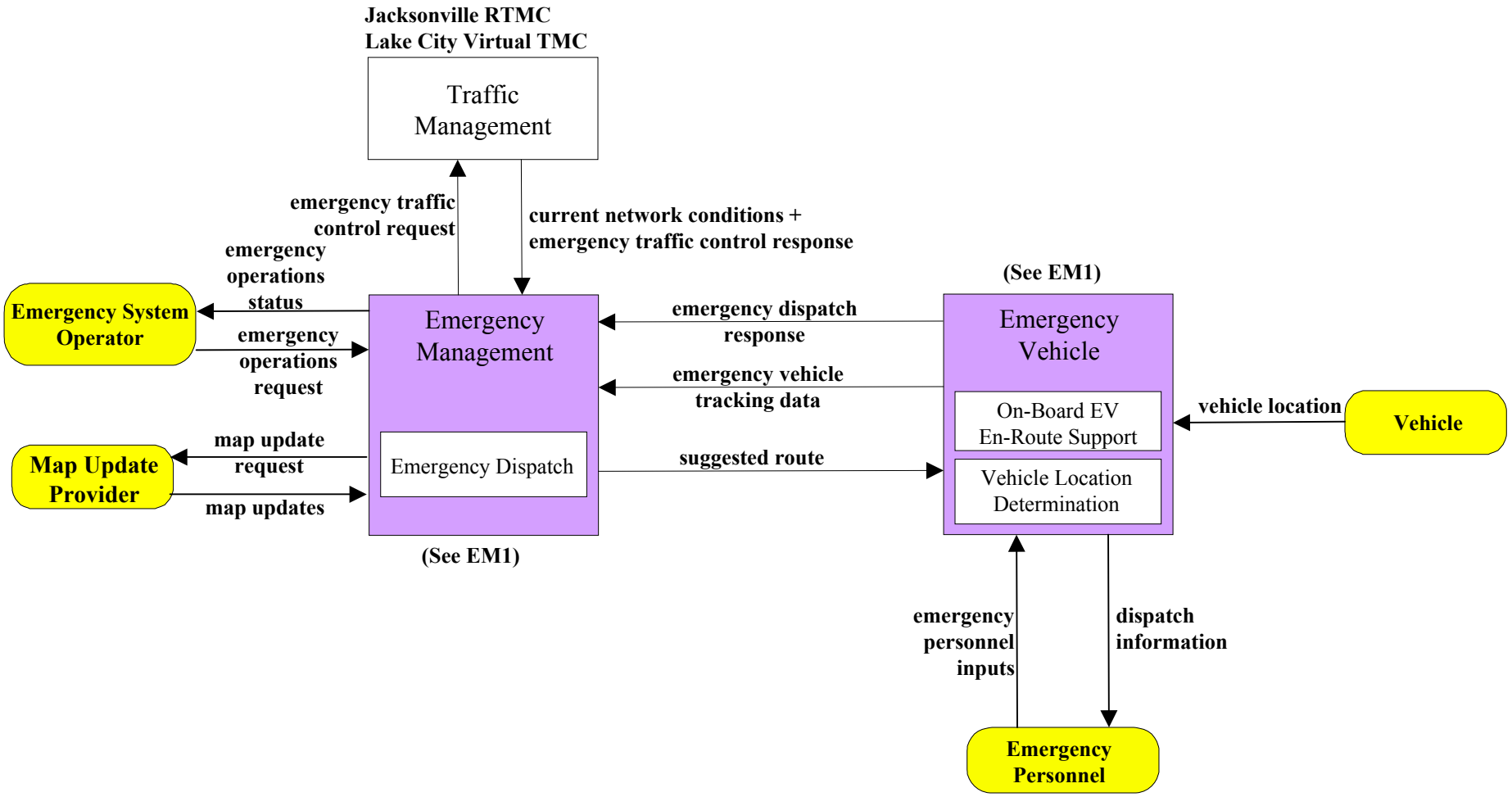
ATMS20 – Speed Management Market Package



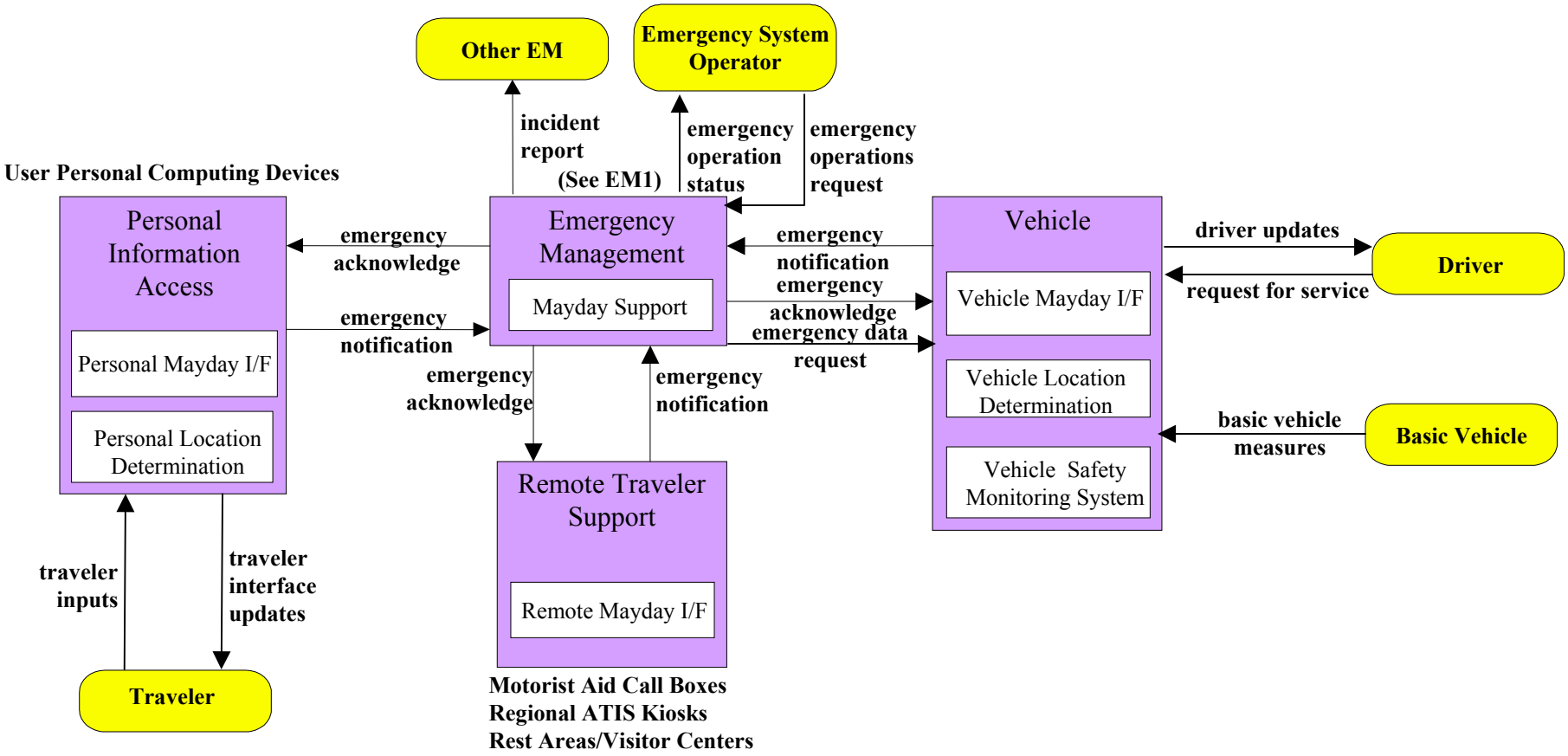
EM1 – Emergency Response Market Package for Service Patrol Providers



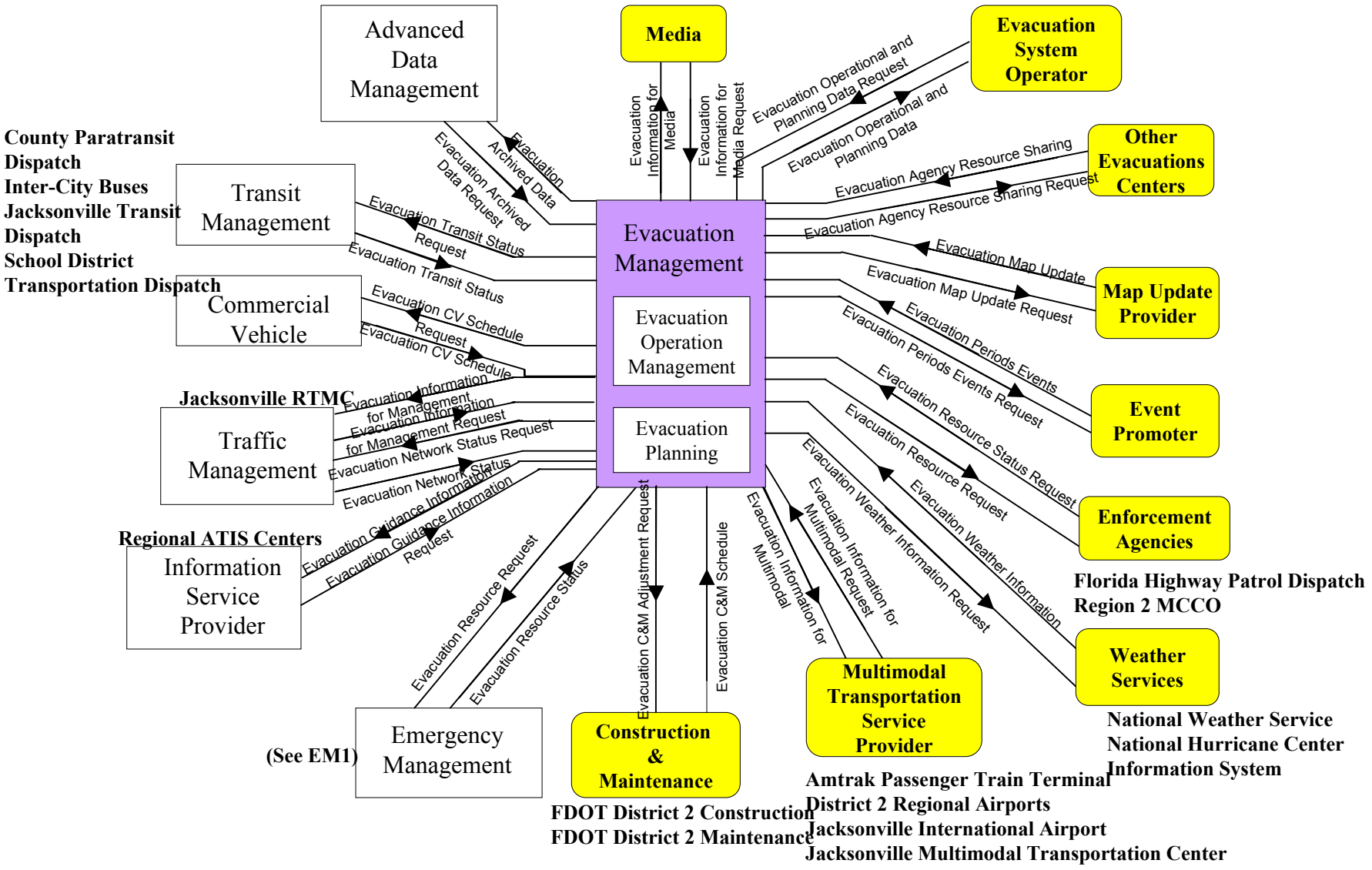
EM2 – Emergency Routing Market Package



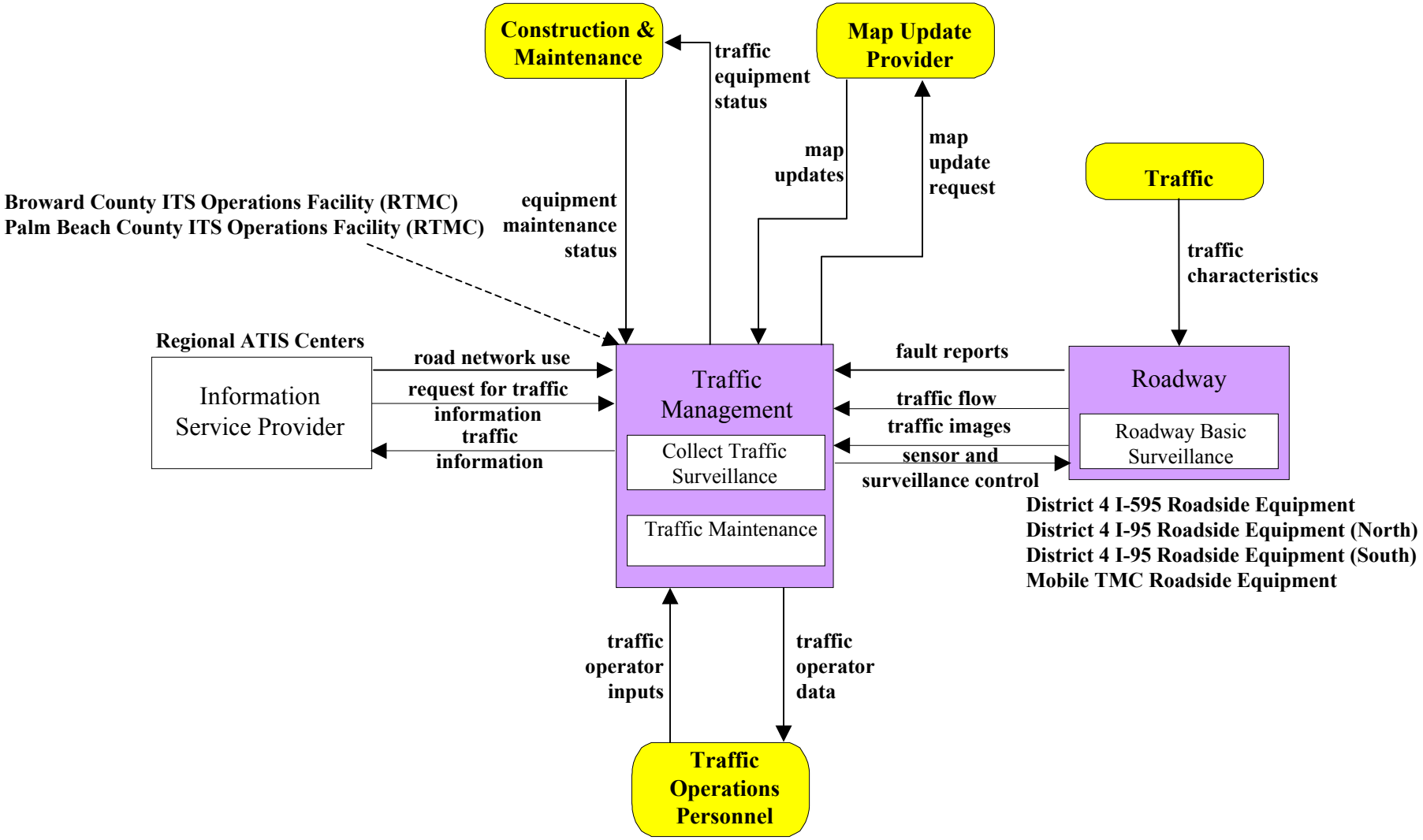
EM3 – Mayday Support Market Package



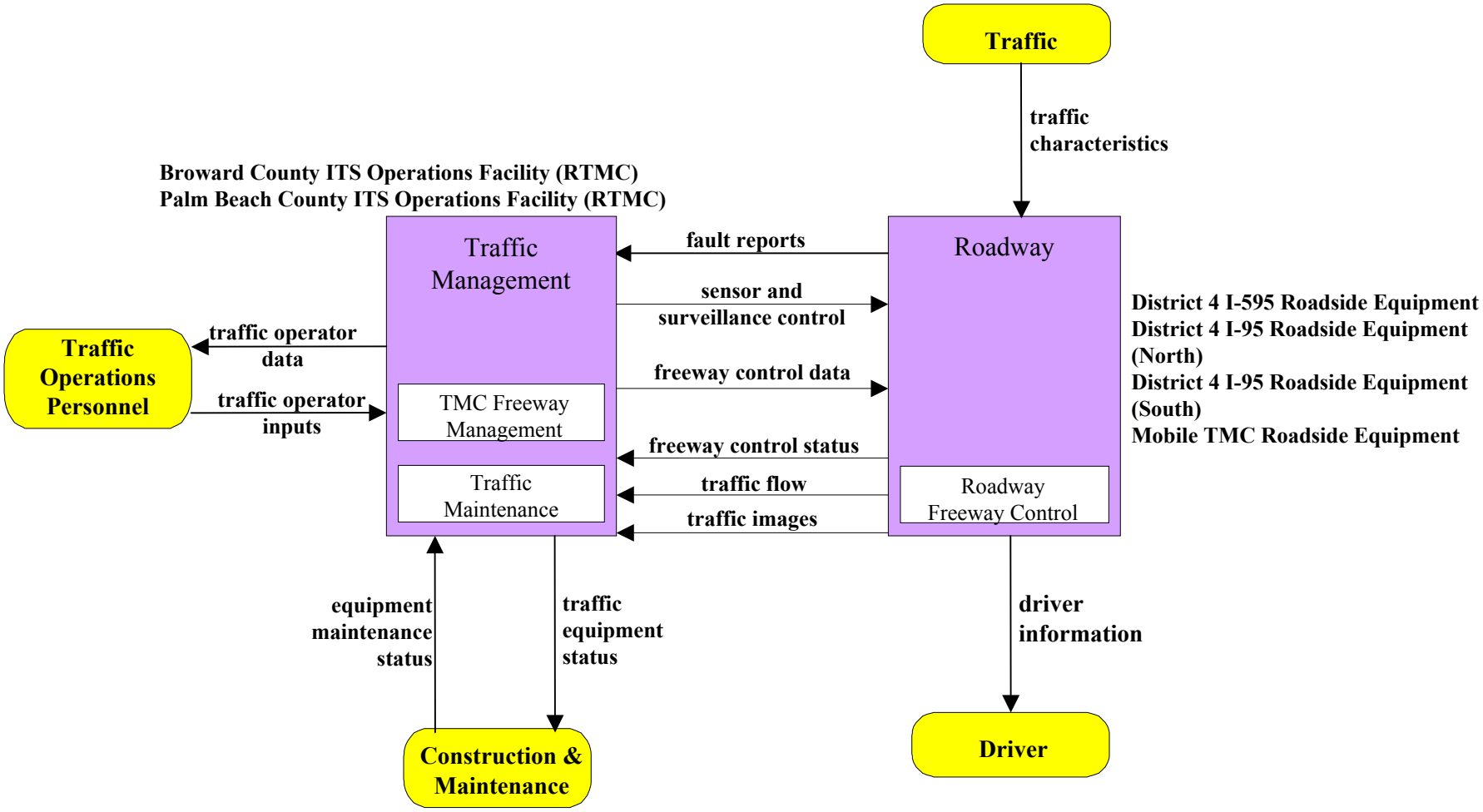
EM4 – Evacuation Management Market Package



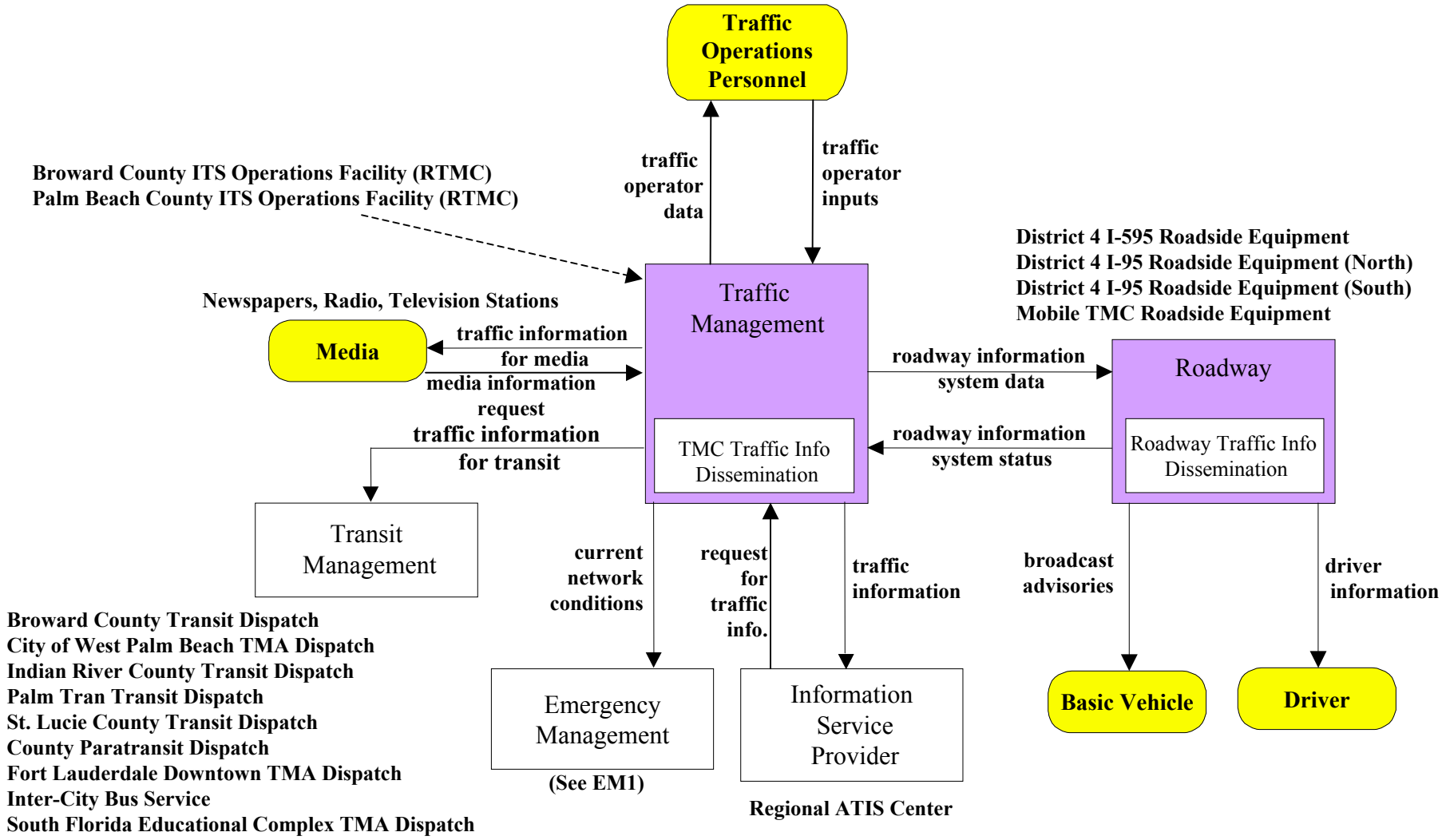
ATMS1 – Network Surveillance Market Package



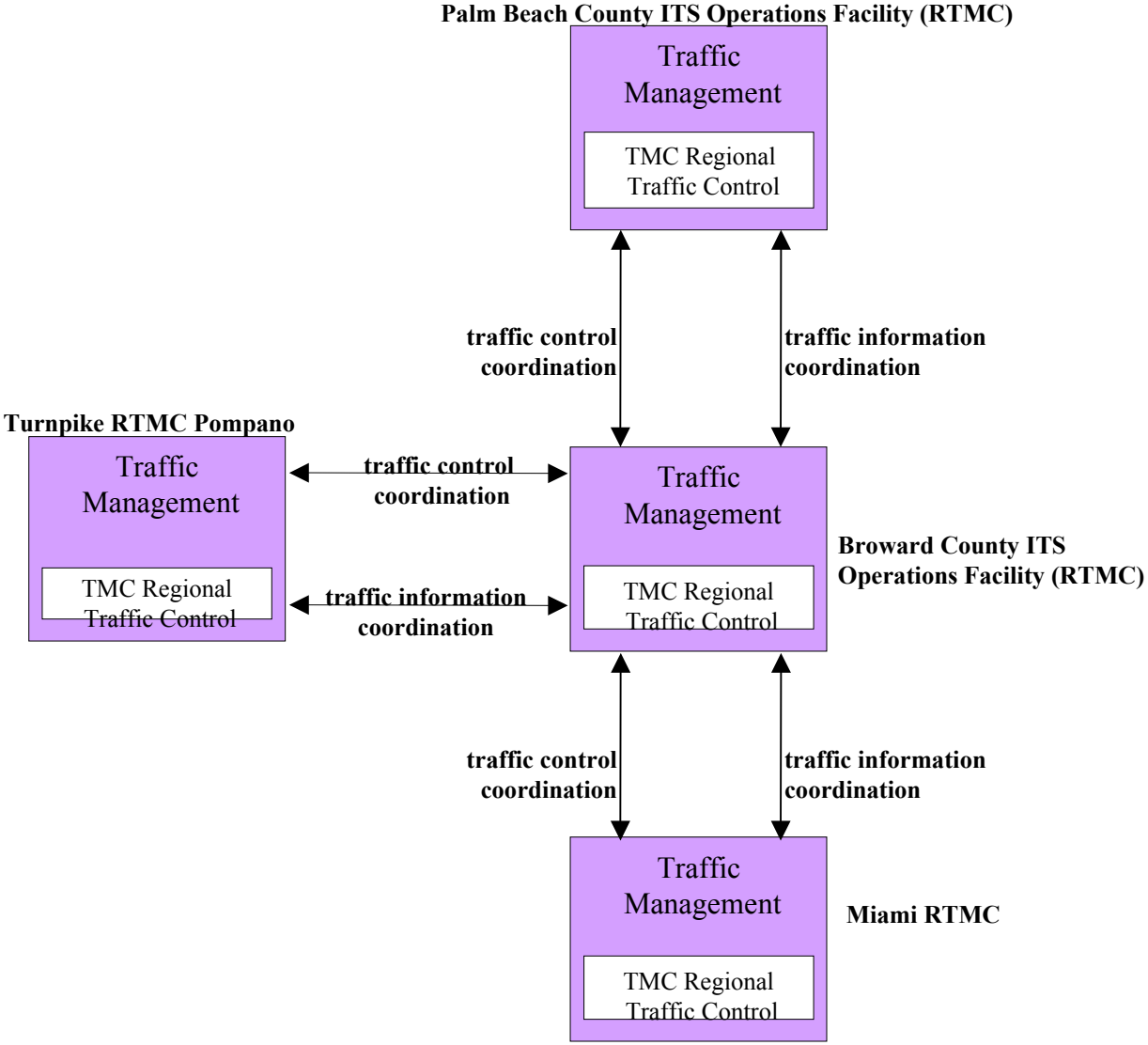
ATMS4 – Freeway Control Market Package



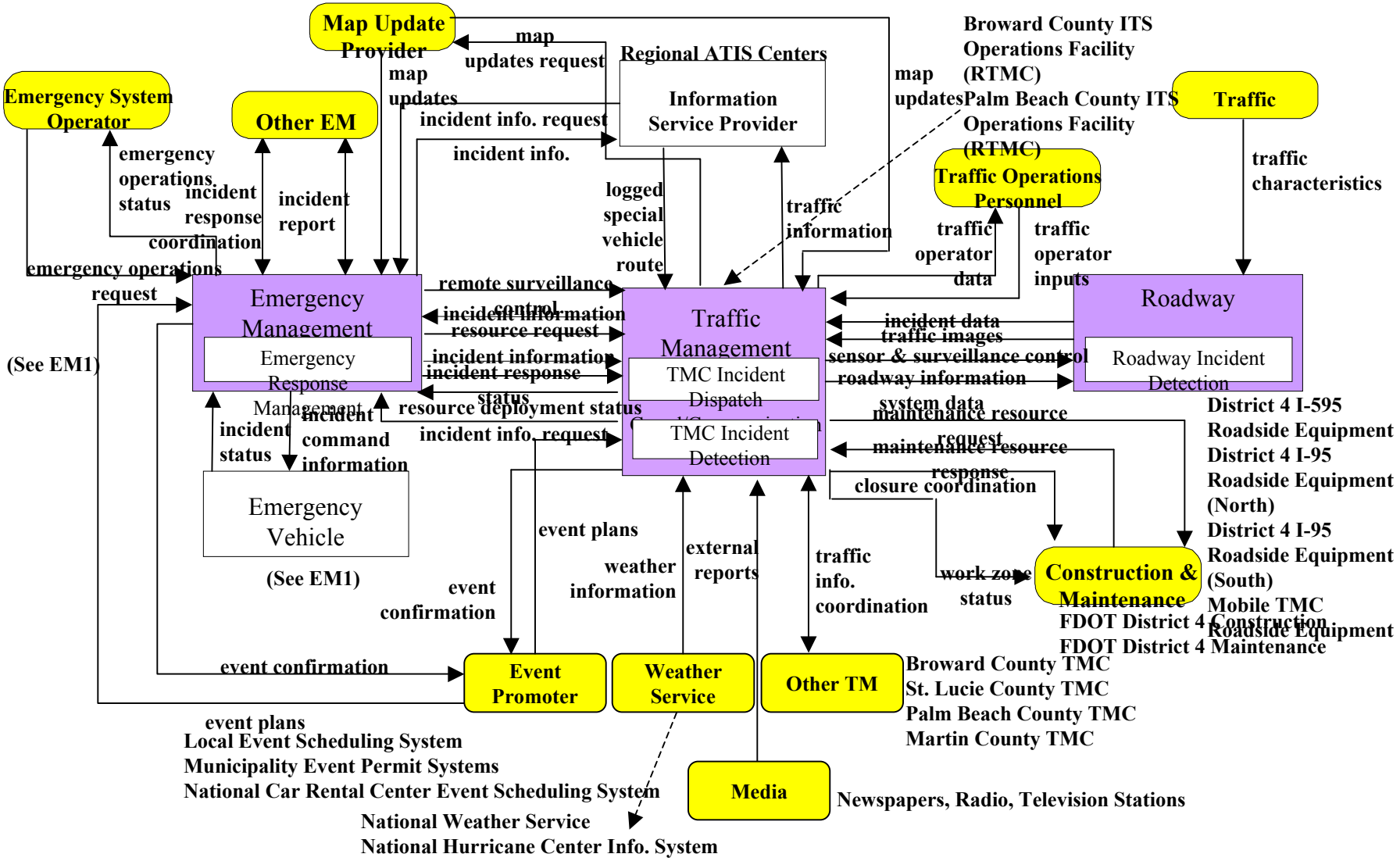
ATMS6 – Traffic Information Dissemination Market Package



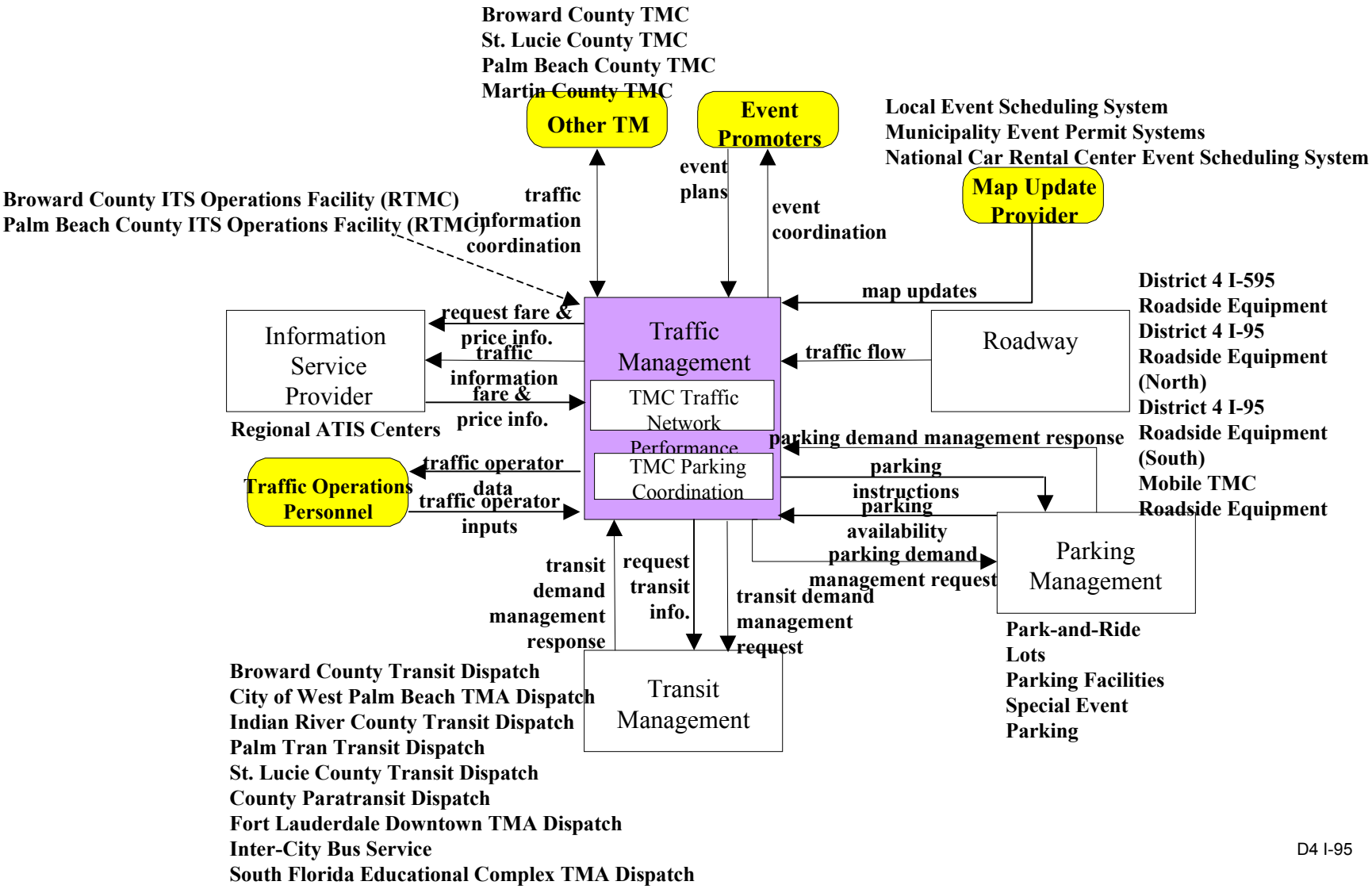
ATMS7 – Regional Traffic Control Market Package



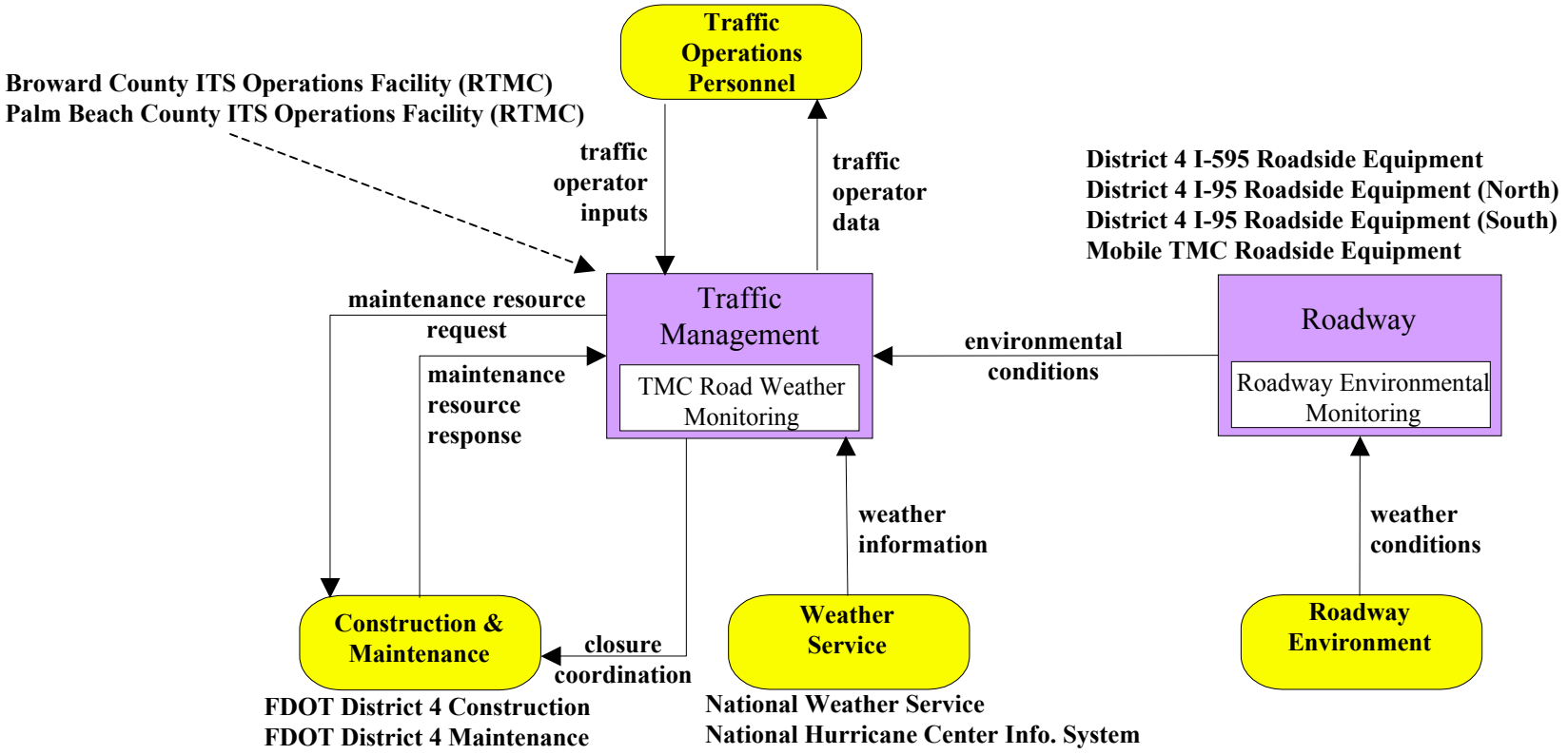
ATMS8 – Incident Management System Market Package



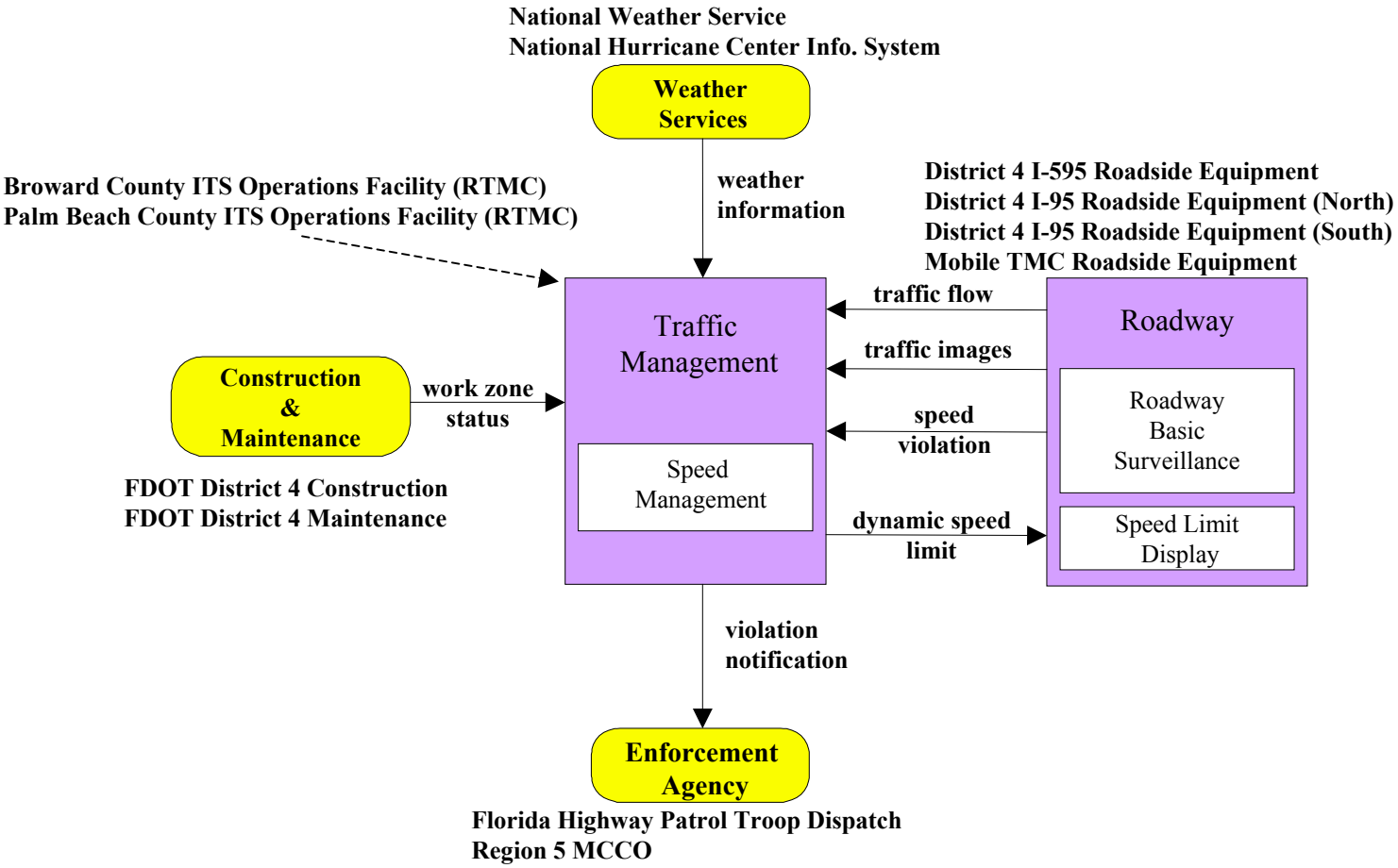
ATMS9 – Traffic Forecast and Demand Management Market Package



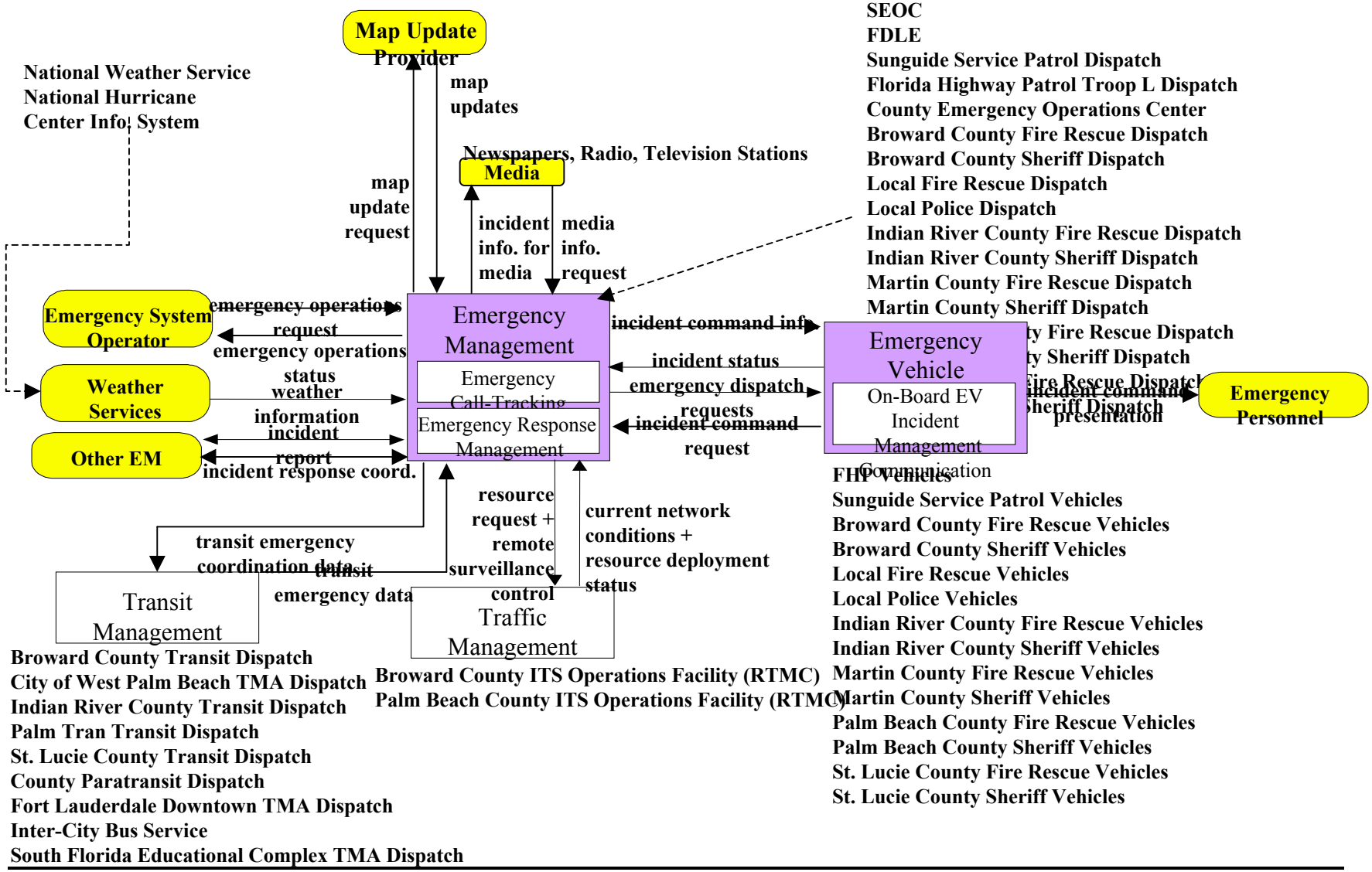
ATMS18 – Road Weather Information System Market Package



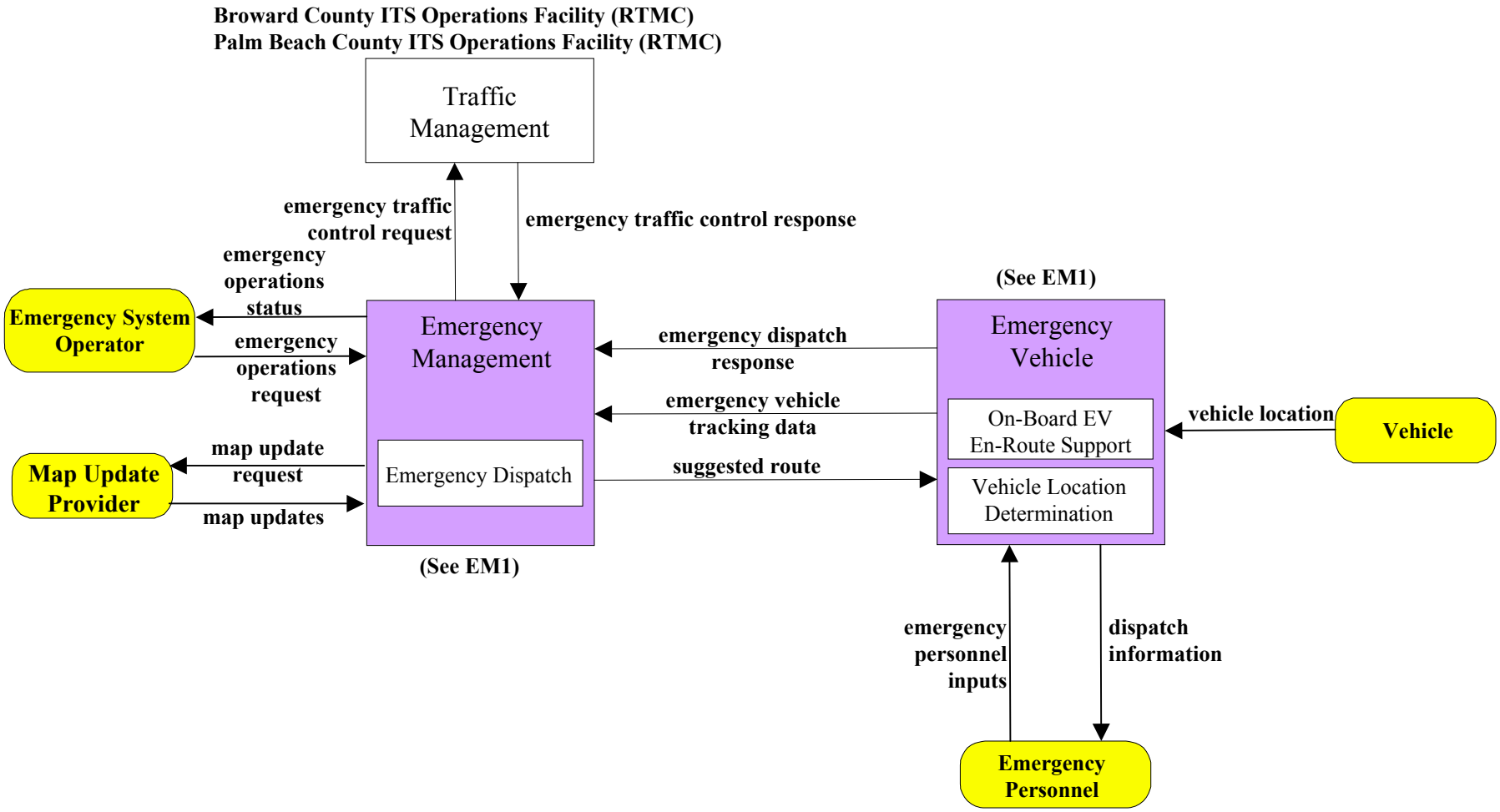
ATMS20 – Speed Management Market Package



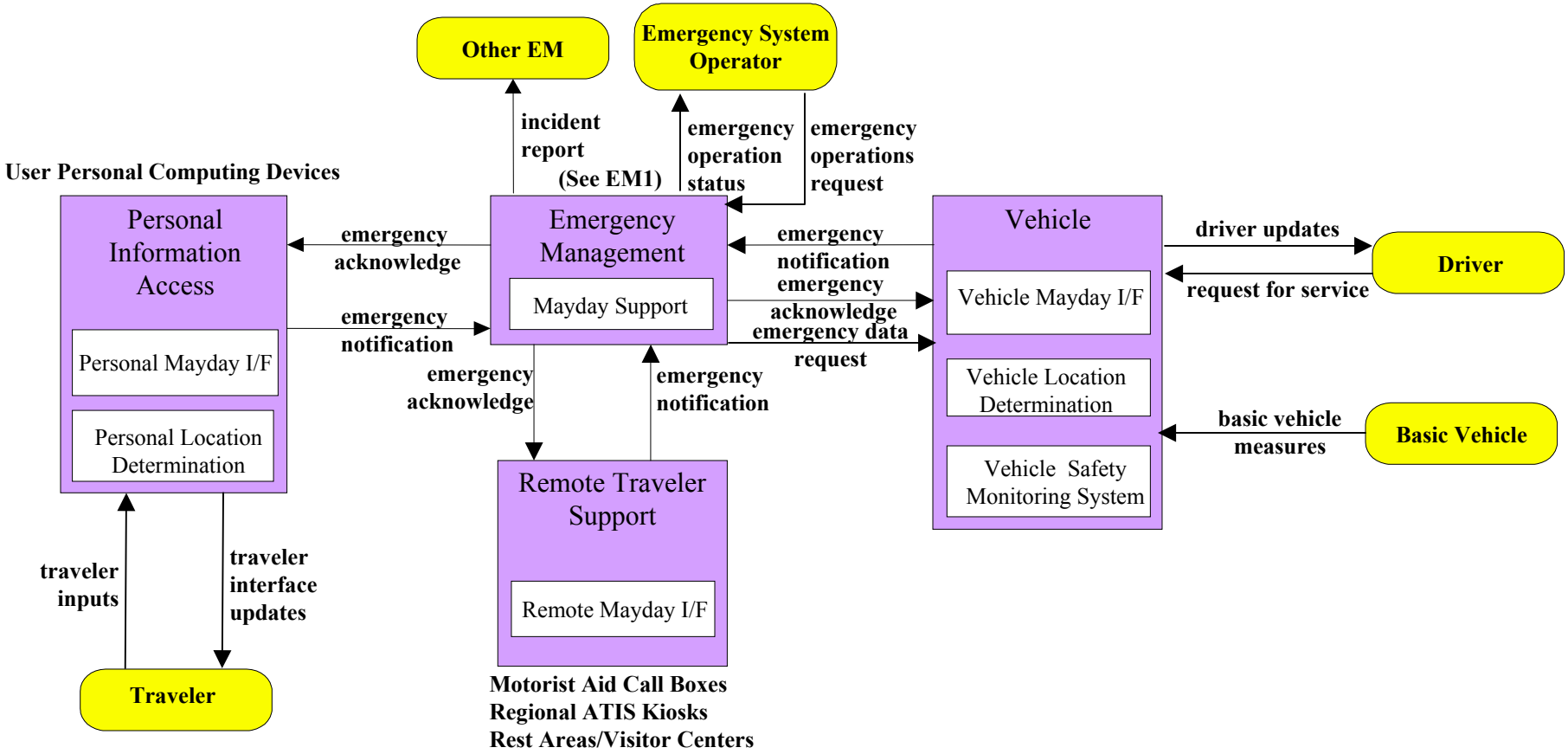
EM1 – Emergency Response () Market Package for Service Patrol Providers



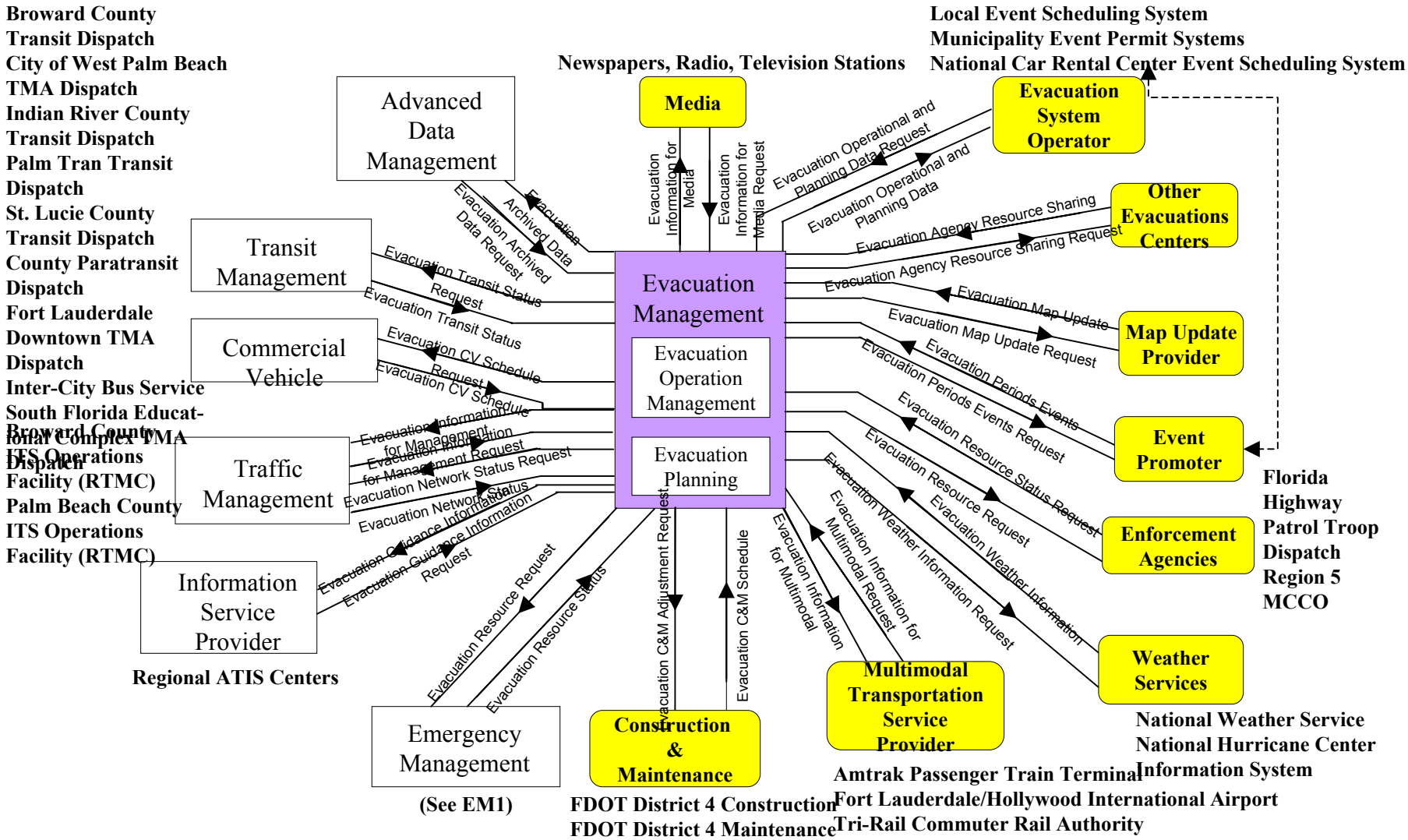
EM2 – Emergency Routing Market Package



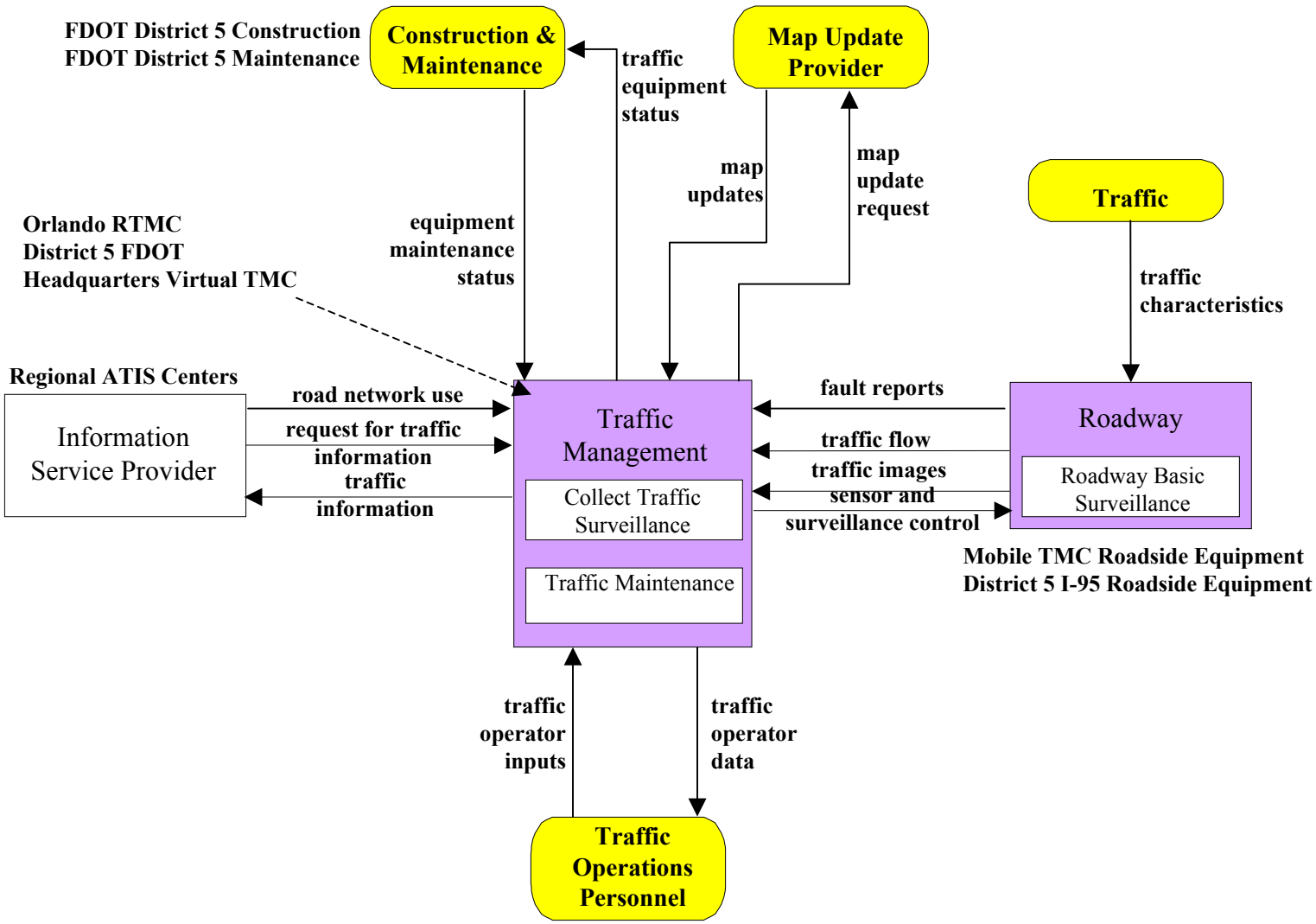
EM3 – Mayday Support Market Package



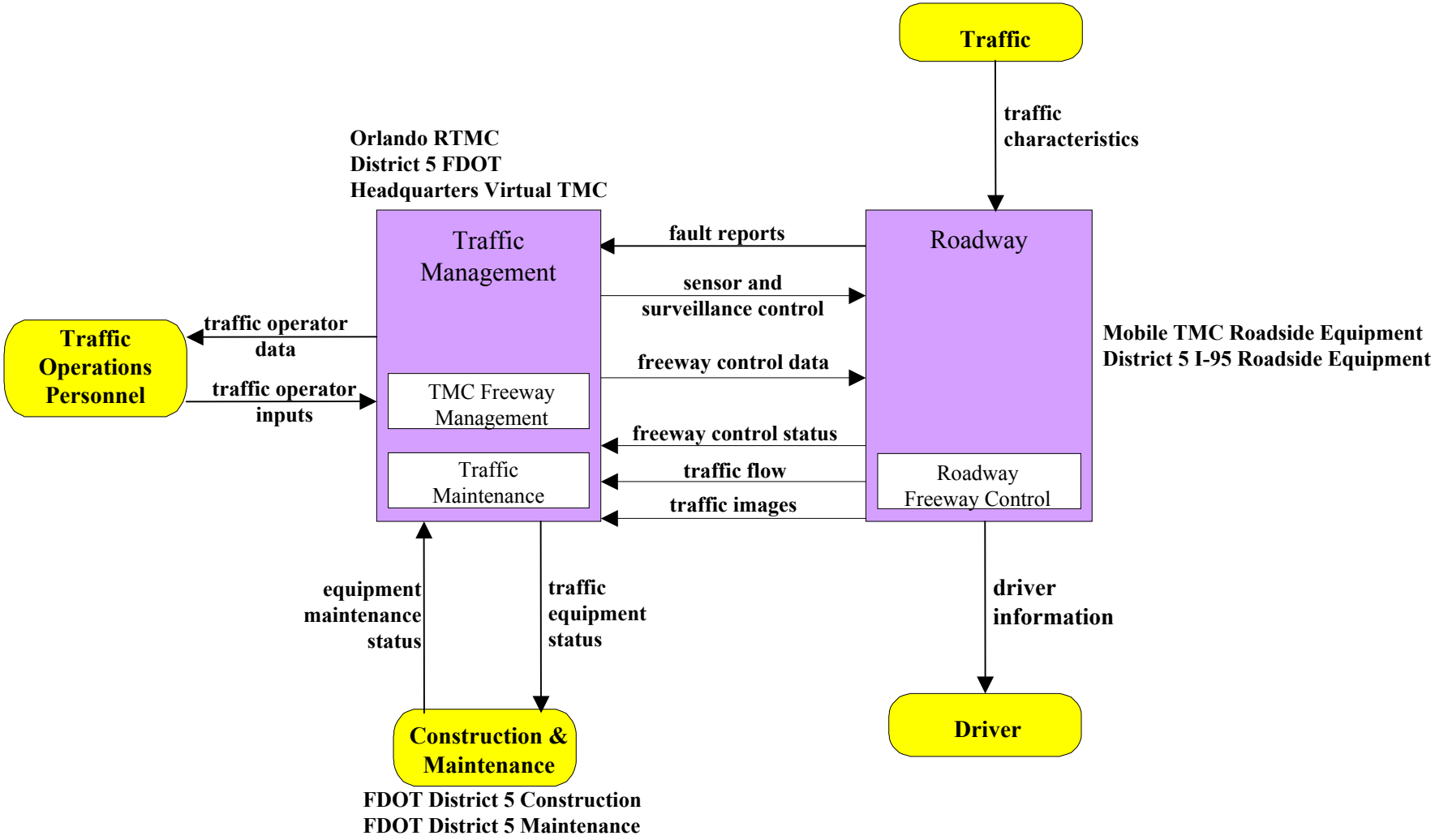
EM4 – Evacuation Management Market Package



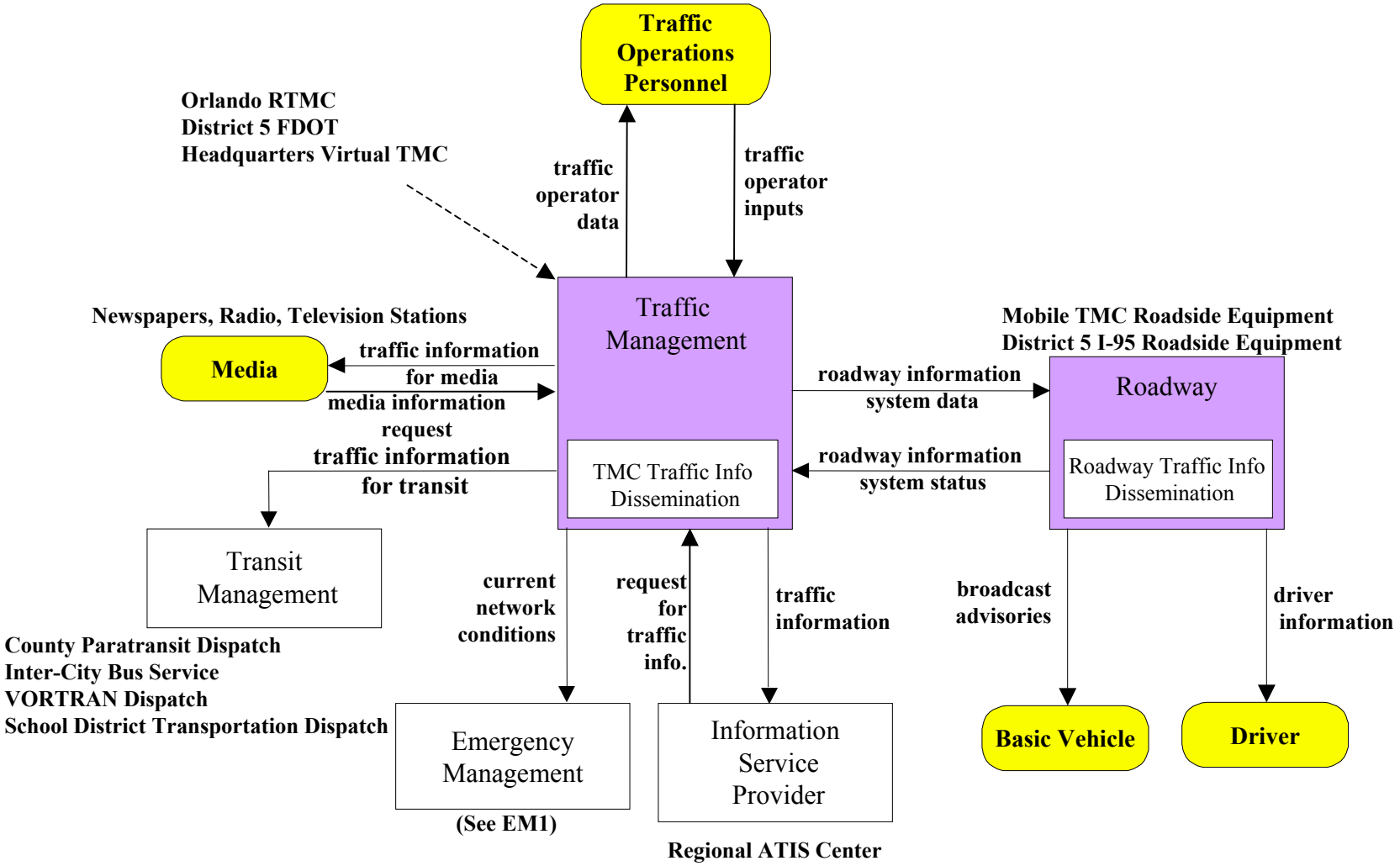
ATMS1 – Network Surveillance Market Package



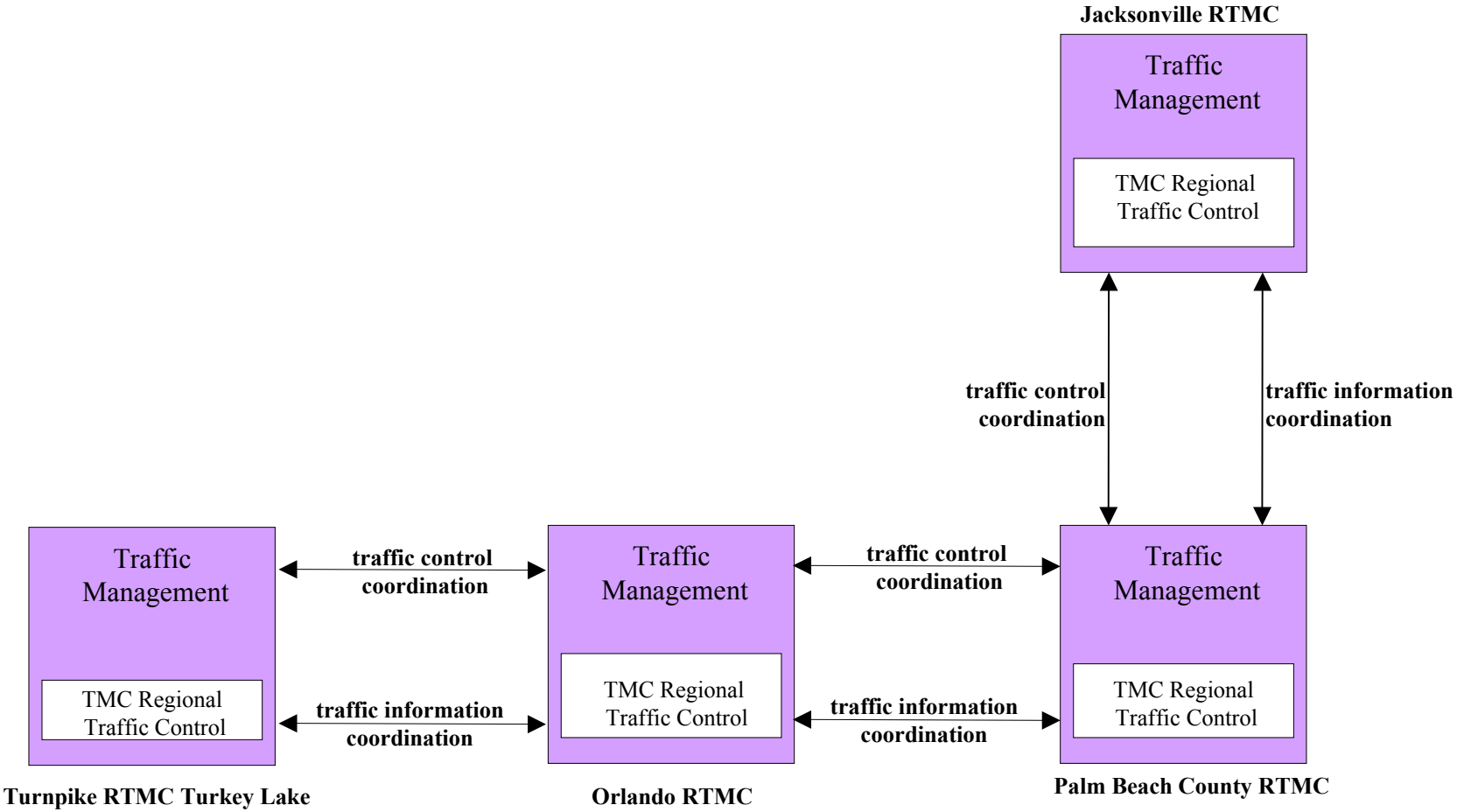
ATMS4 – Freeway Control Market Package



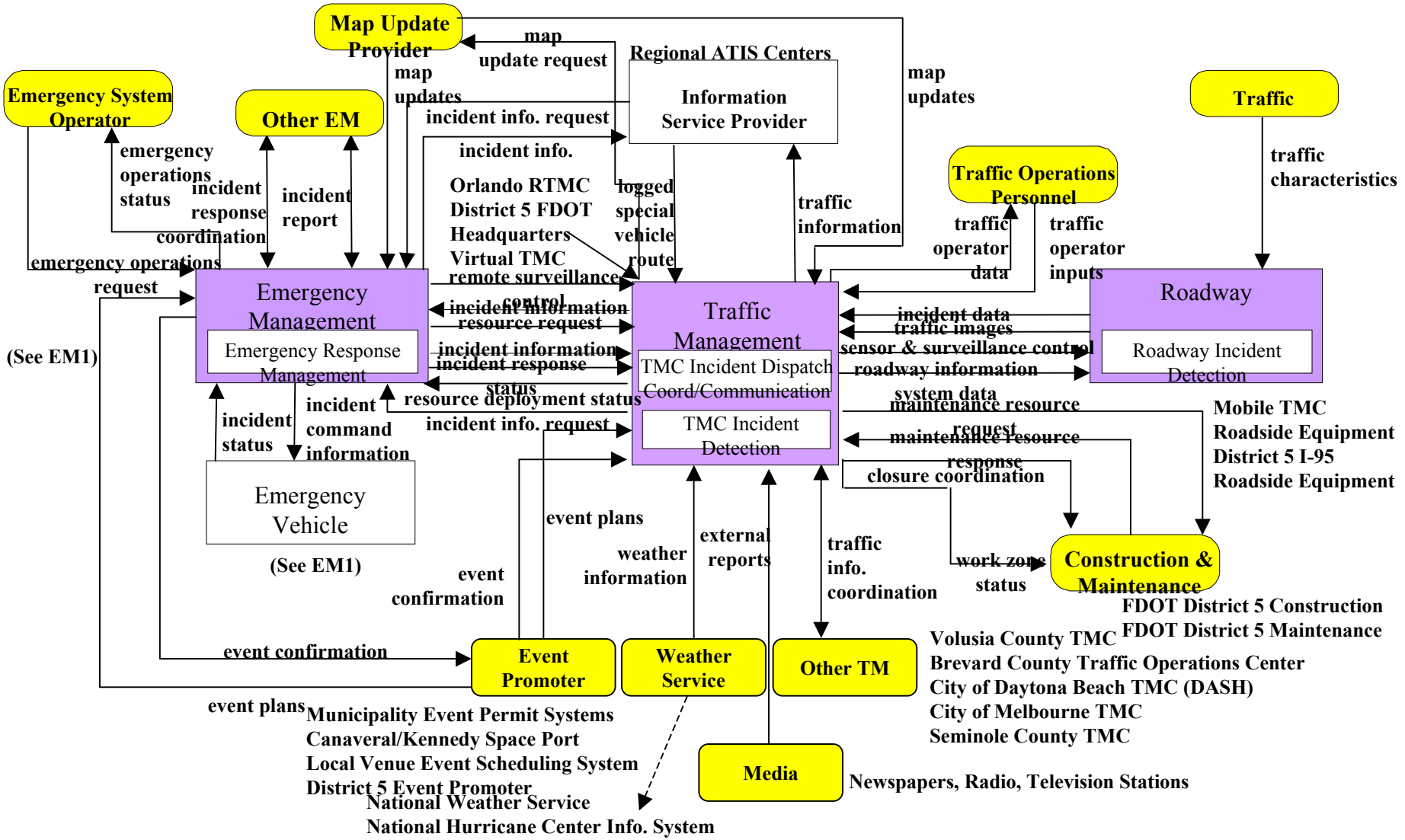
ATMS6 – Traffic Information Dissemination Market Package



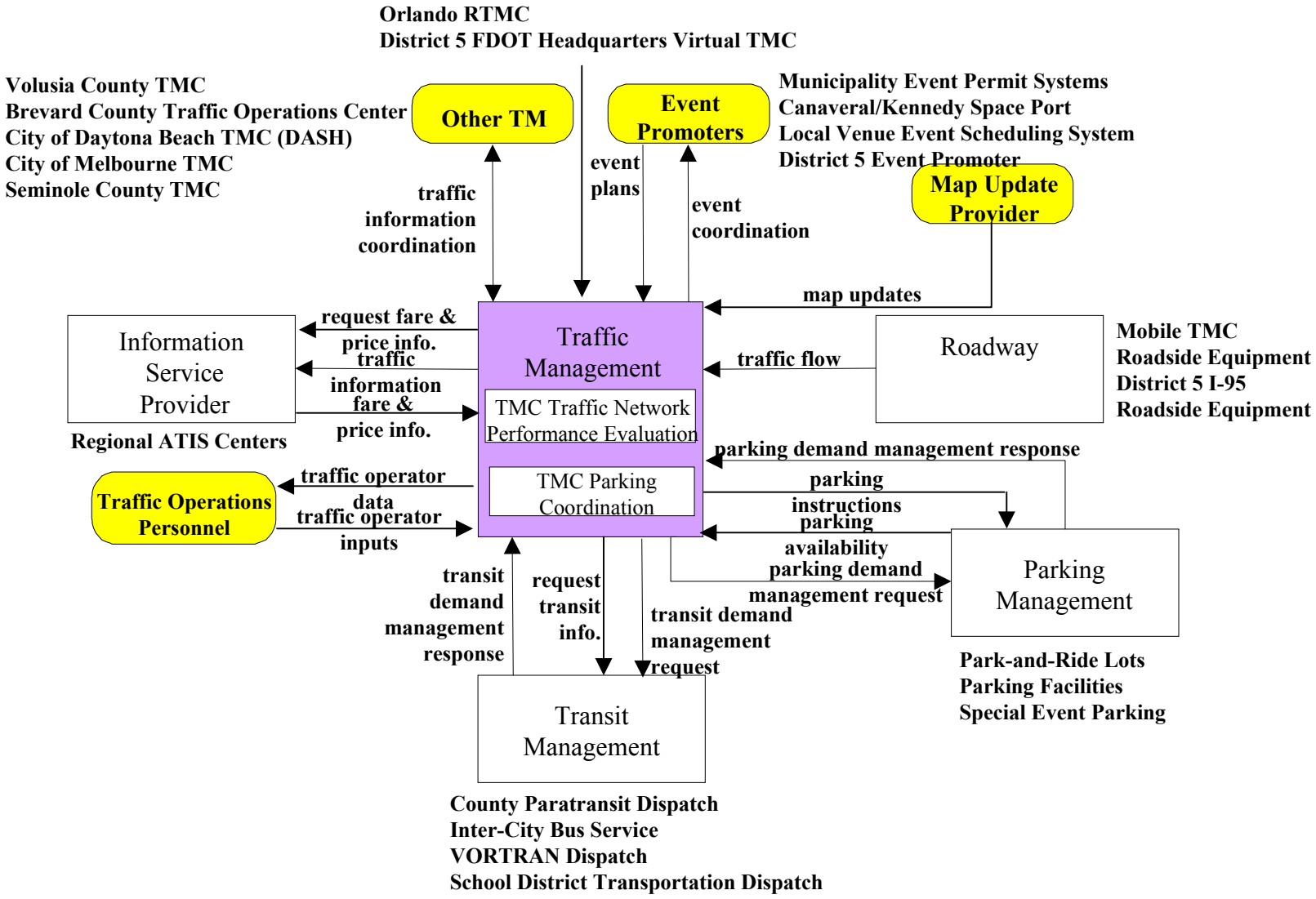
ATMS7 – Regional Traffic Control Market Package



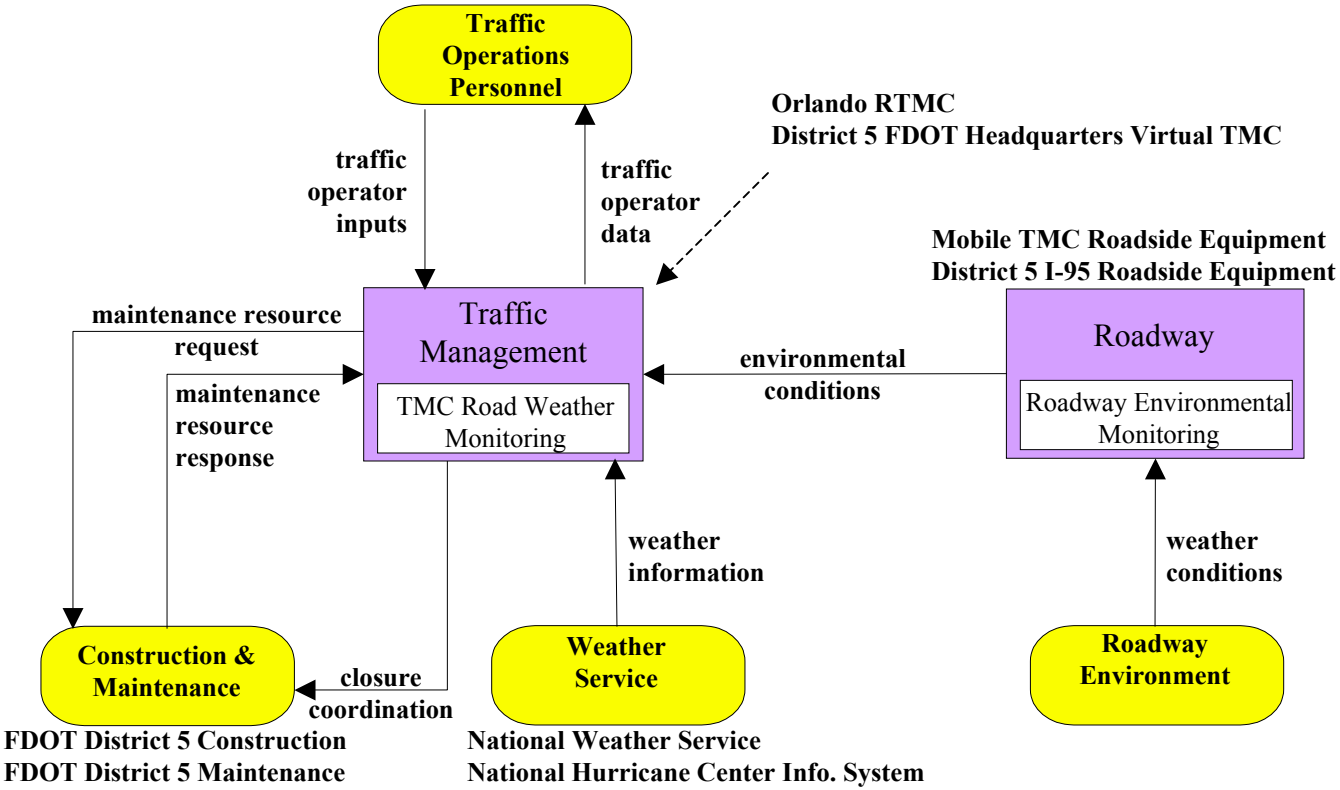
ATMS8 – Incident Management System Market Package



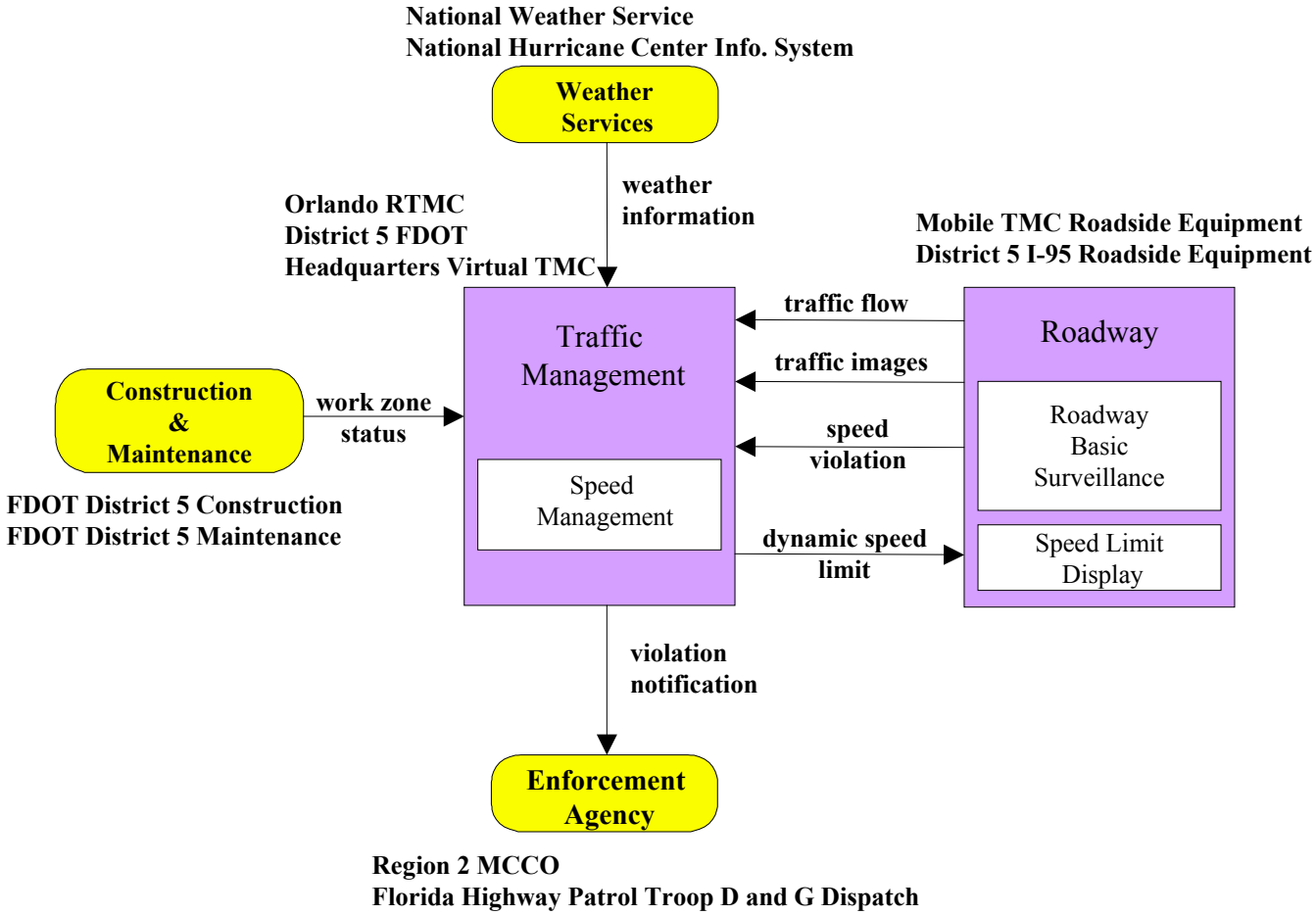
ATMS9 – Traffic Forecast and Demand Management Market Package



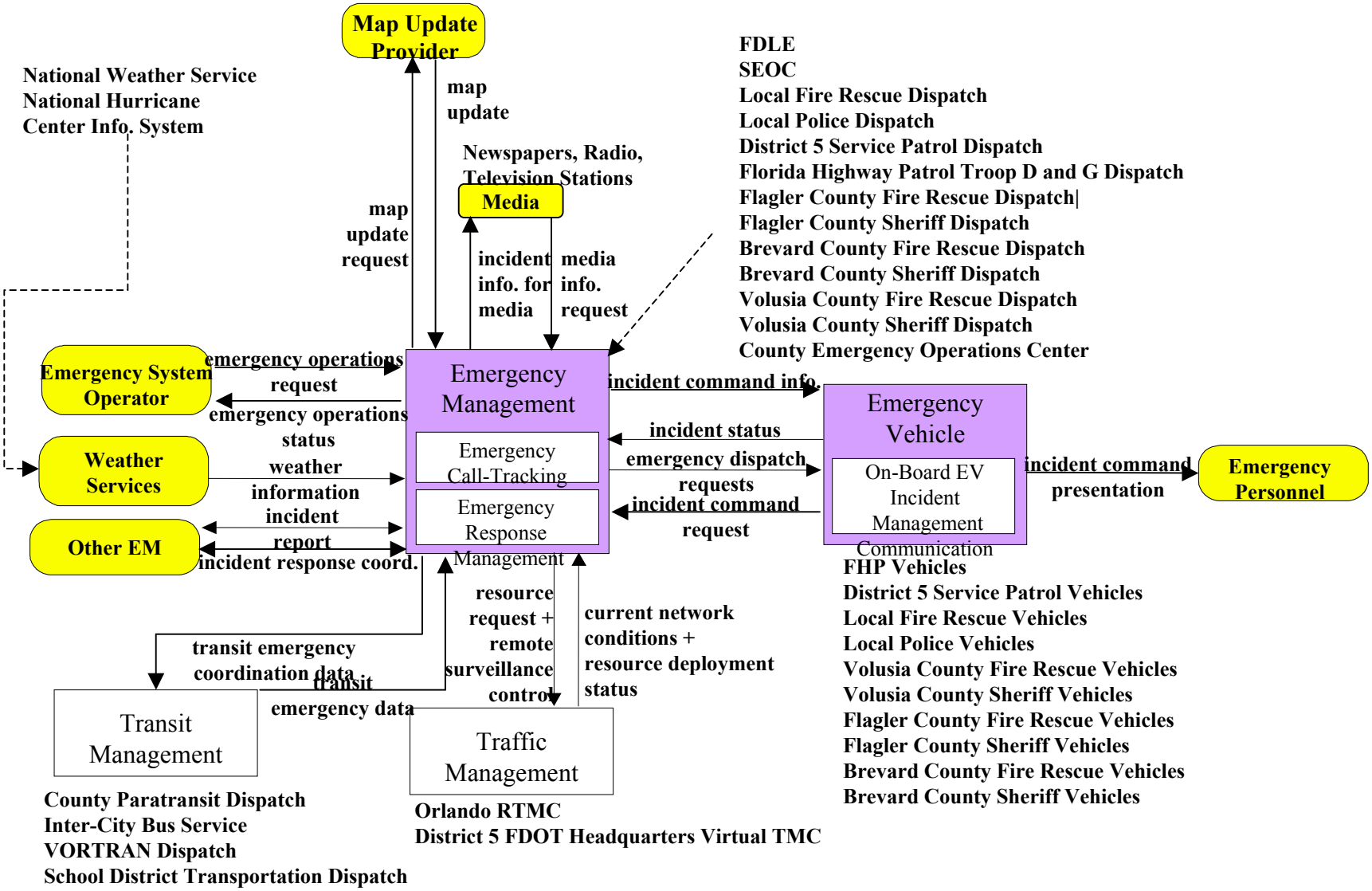
ATMS18 – Road Weather Information System Market Package



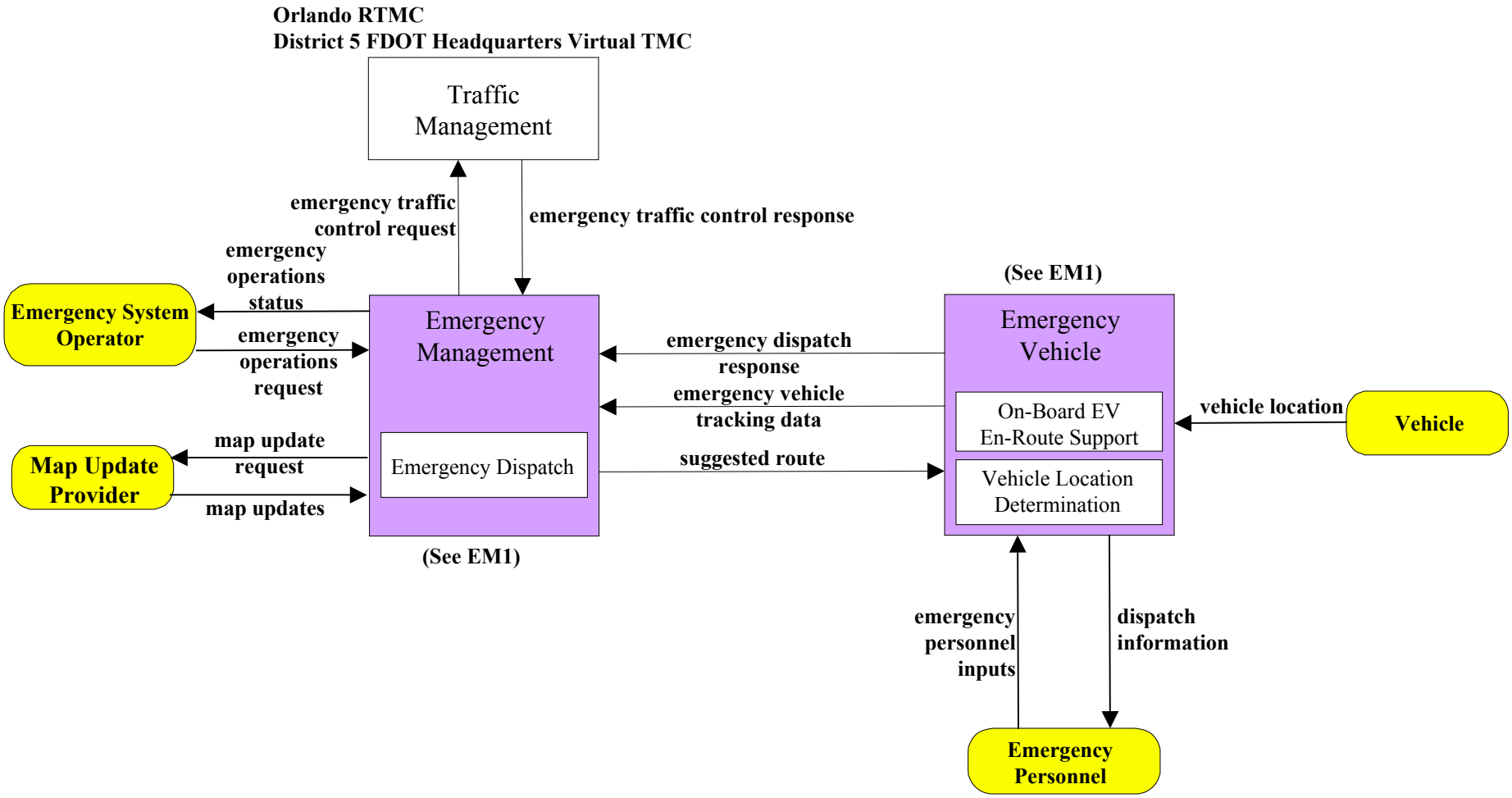
ATMS20 – Speed Management Market Package



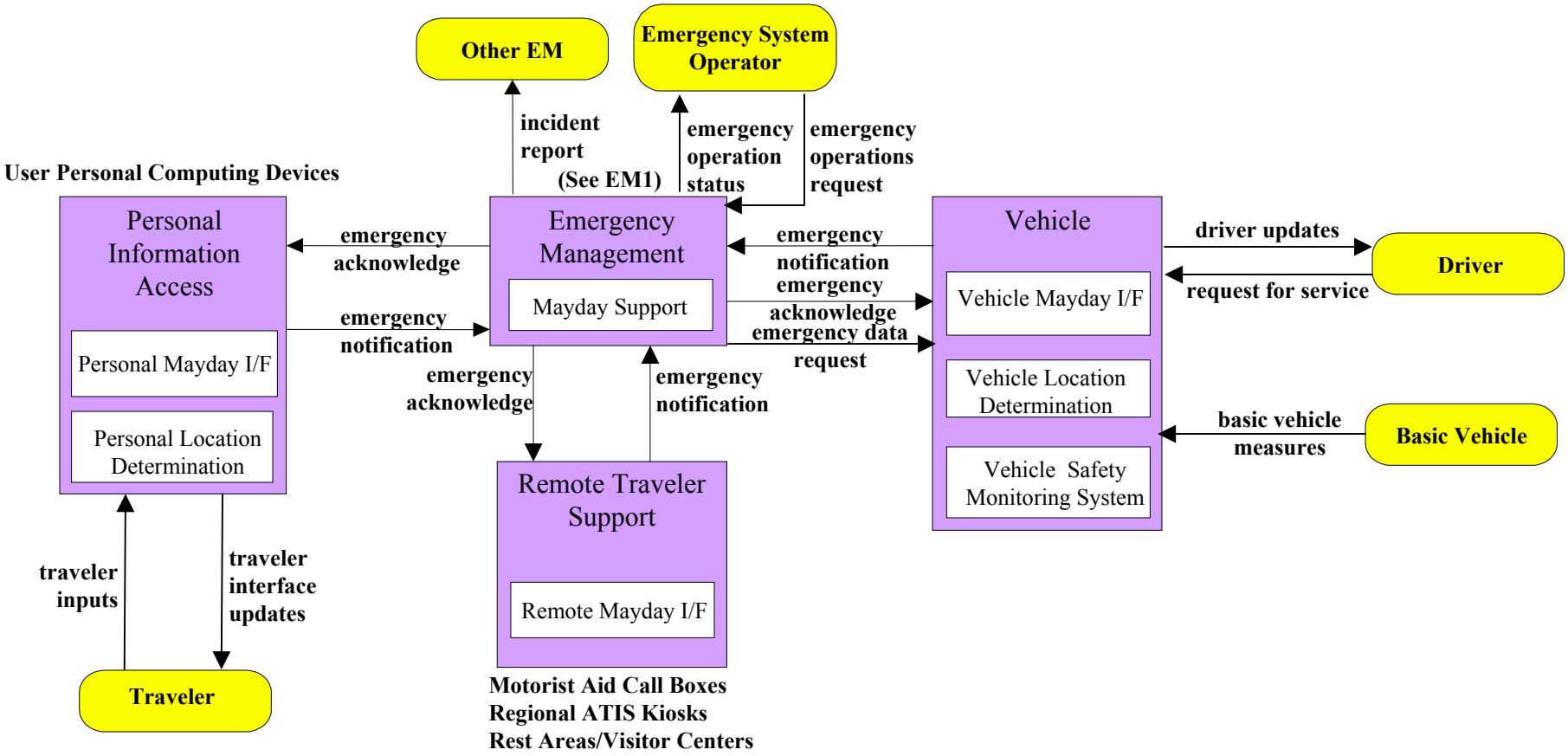
EM1 – Emergency Response Market Package for Service Patrol Providers



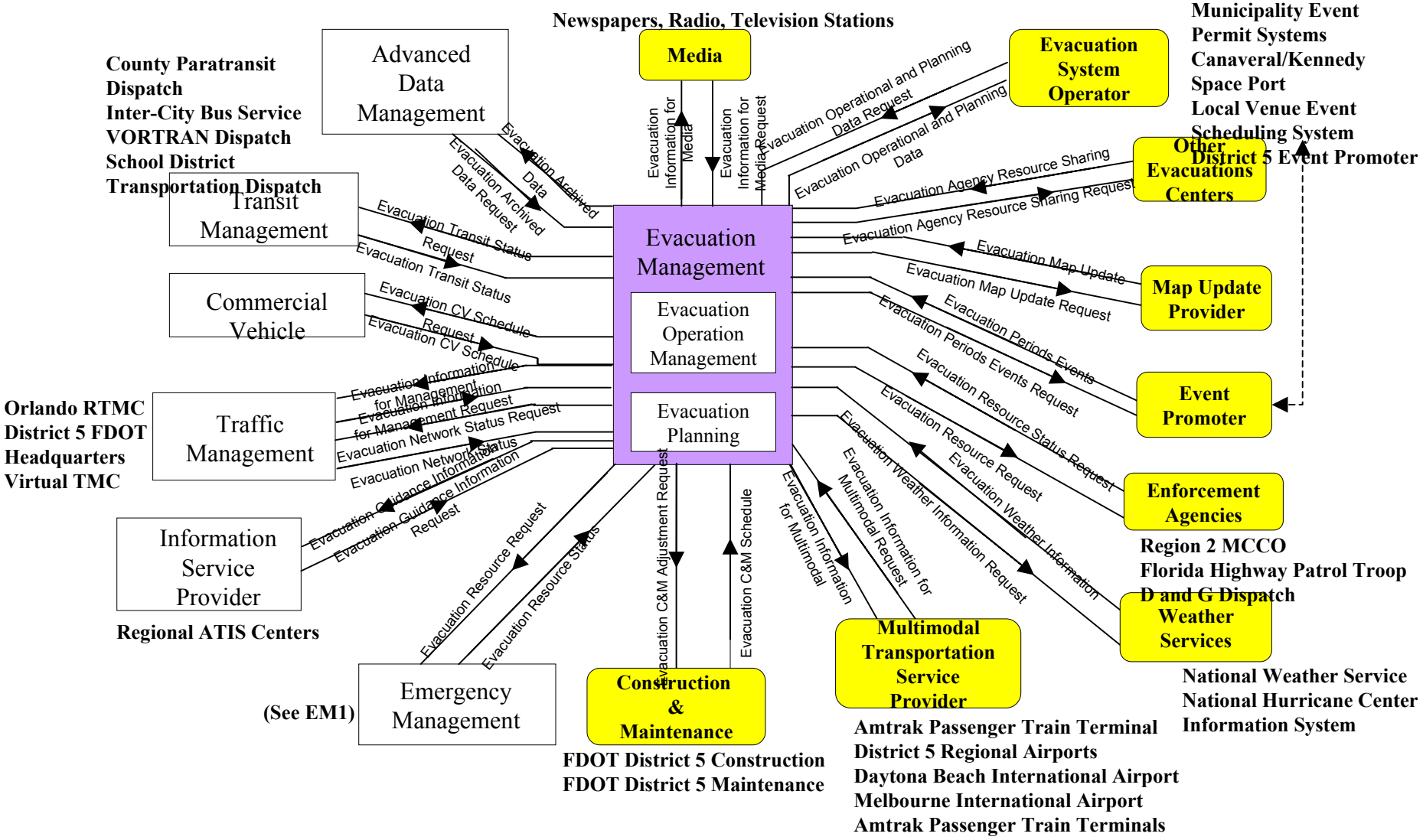
EM2 – Emergency Routing Market Package



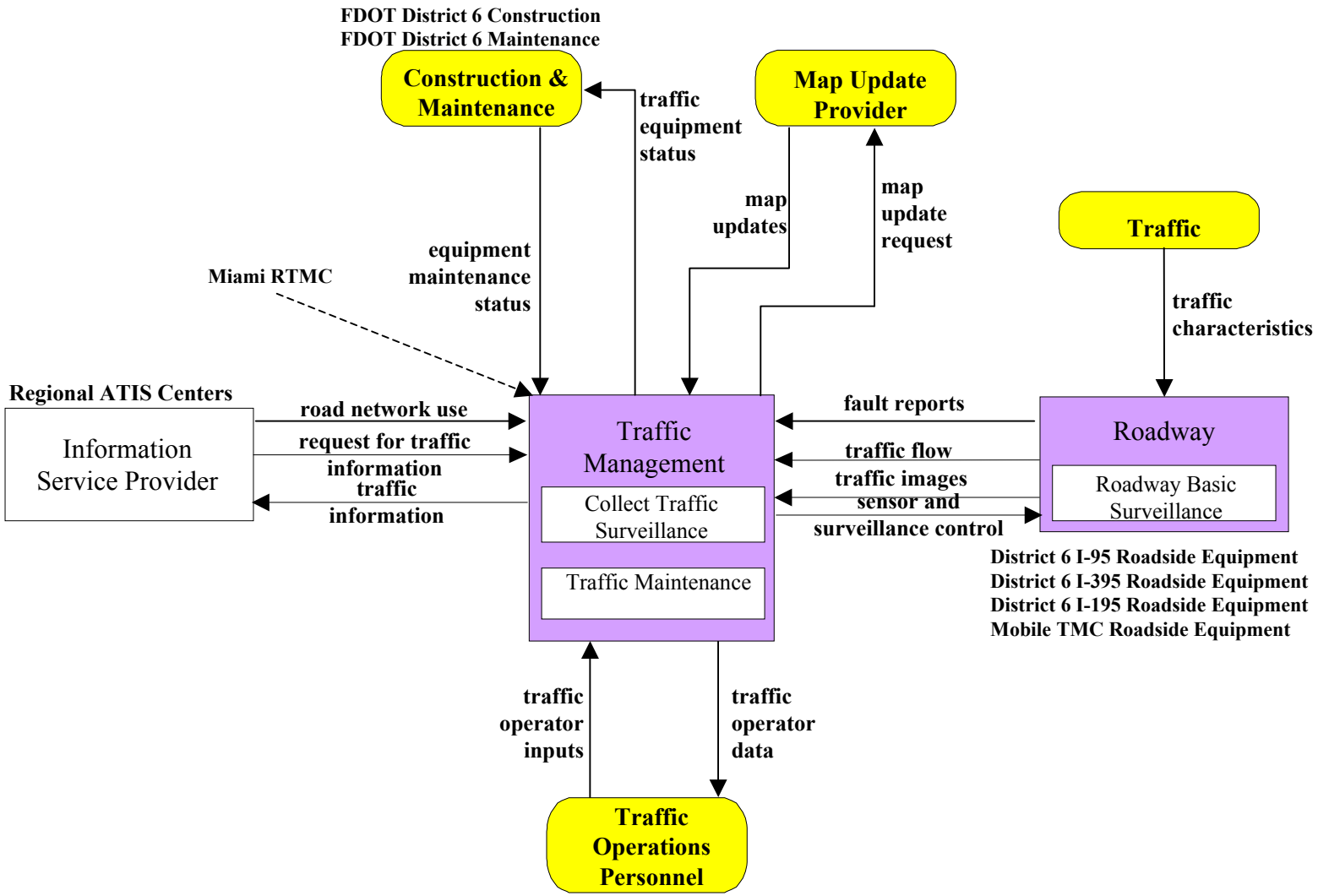
EM3 – Mayday Support Market Package



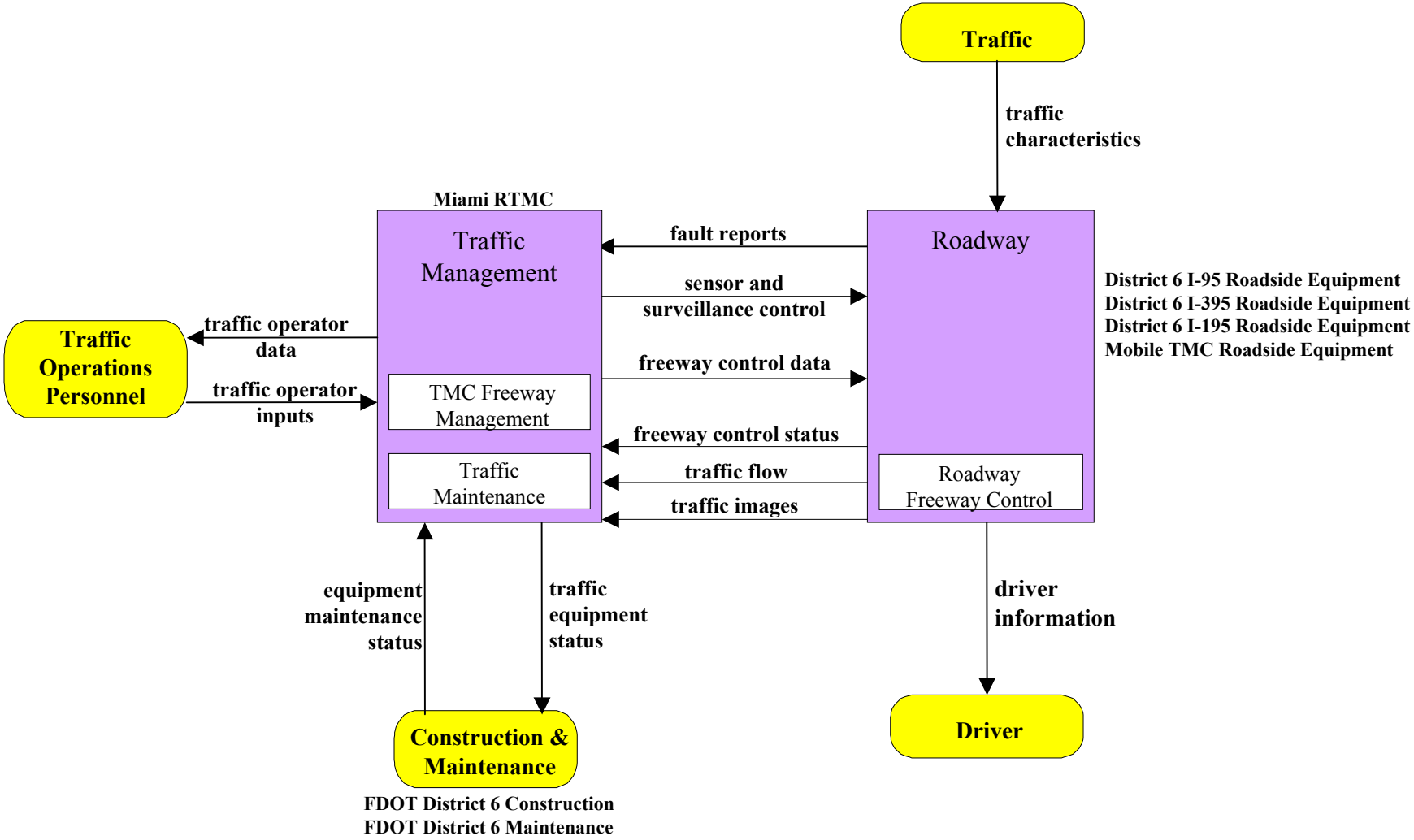
EM4 – Evacuation Management Market Package



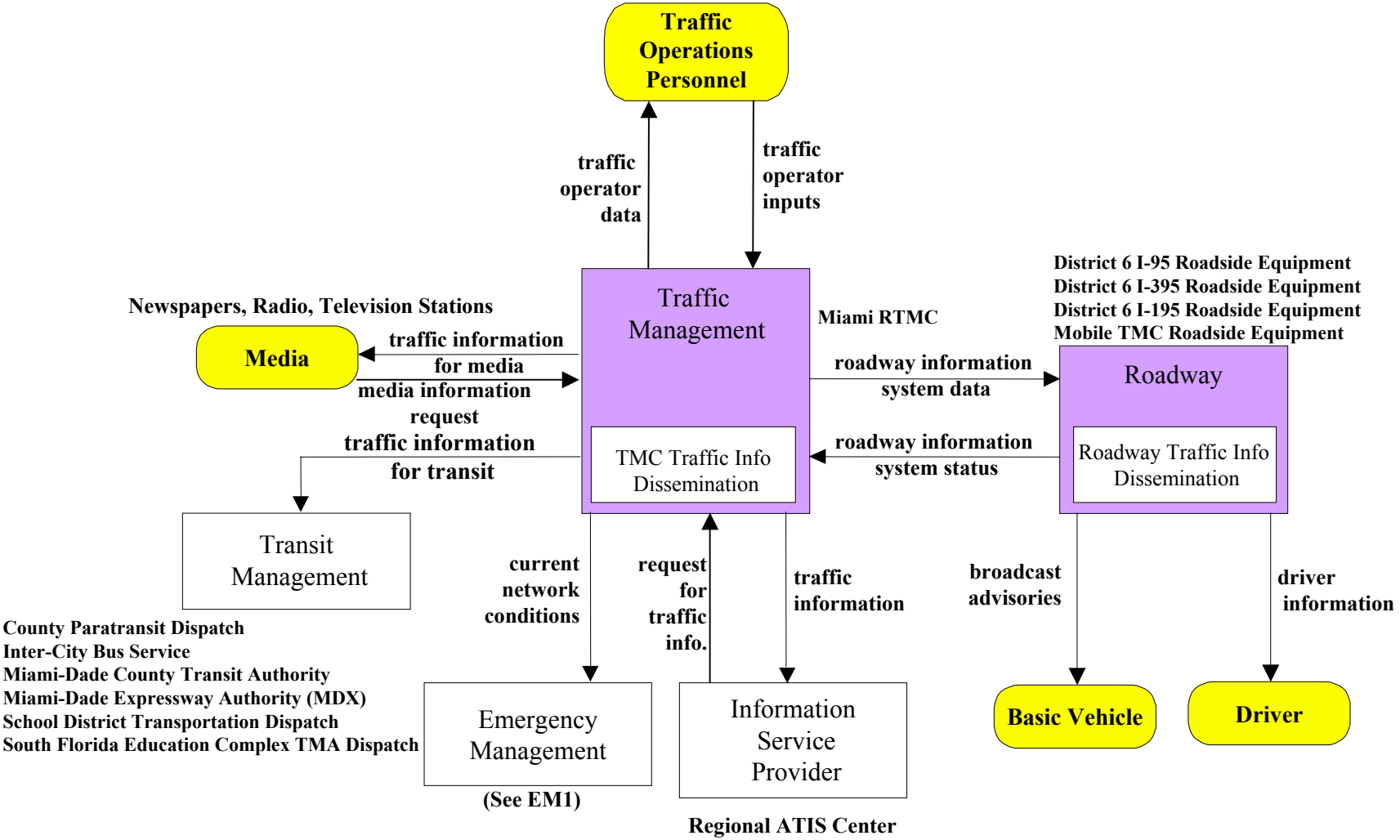
ATMS1 – Network Surveillance Market Package



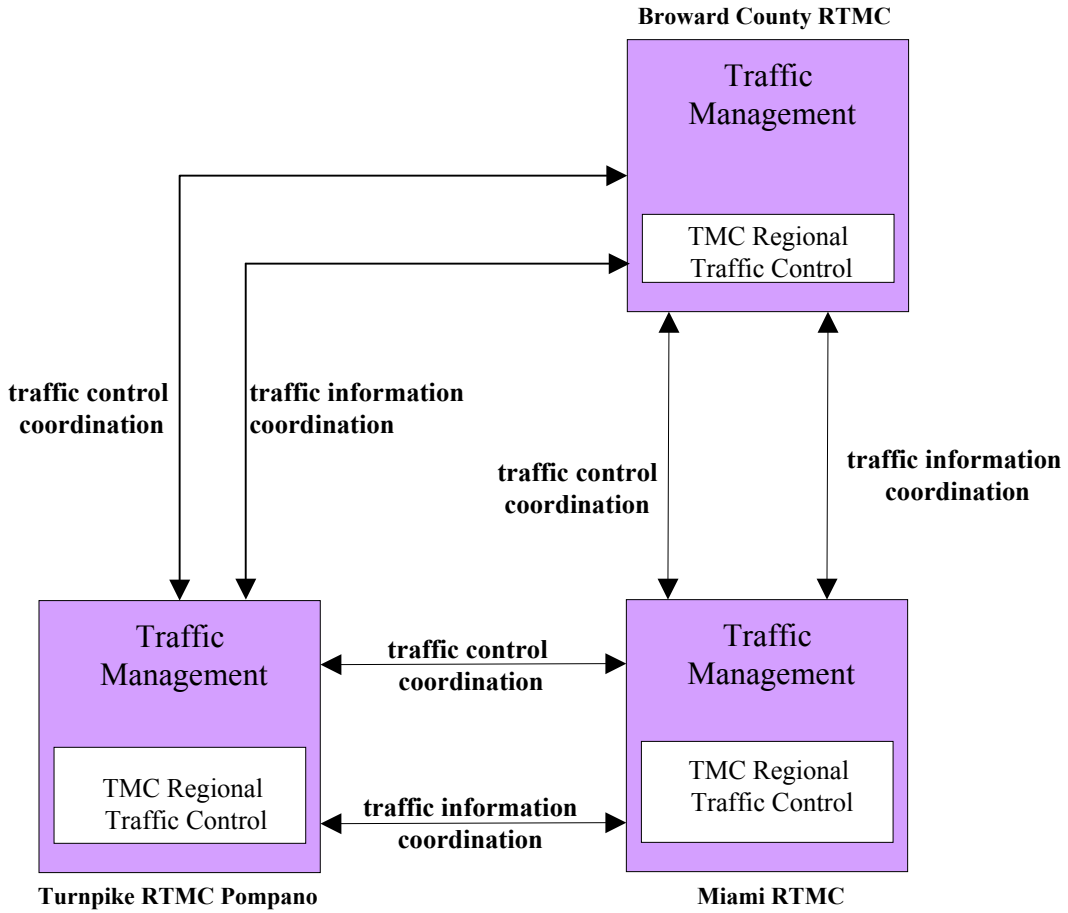
ATMS4 – Freeway Control Market Package



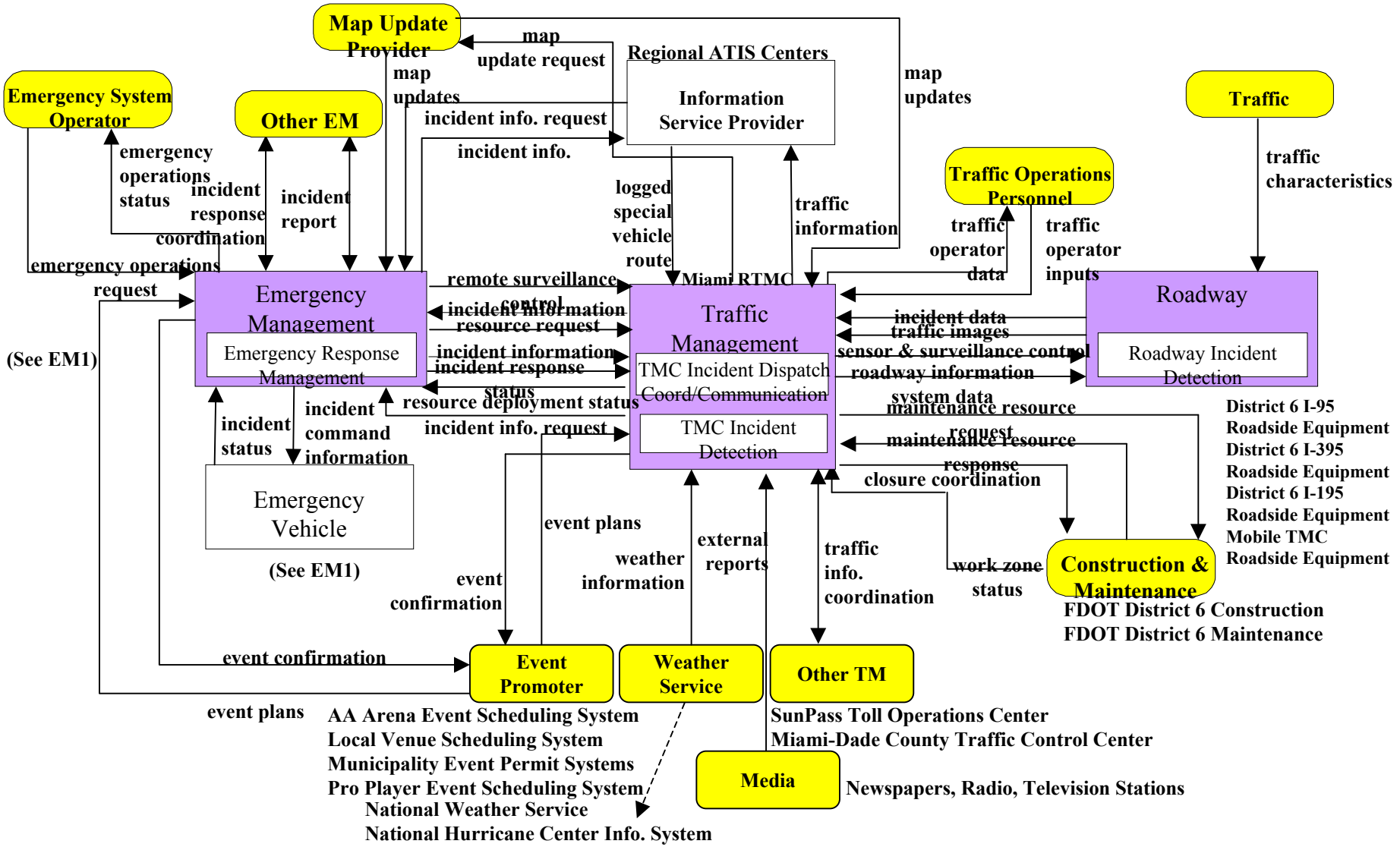
ATMS6 – Traffic Information Dissemination Market Package



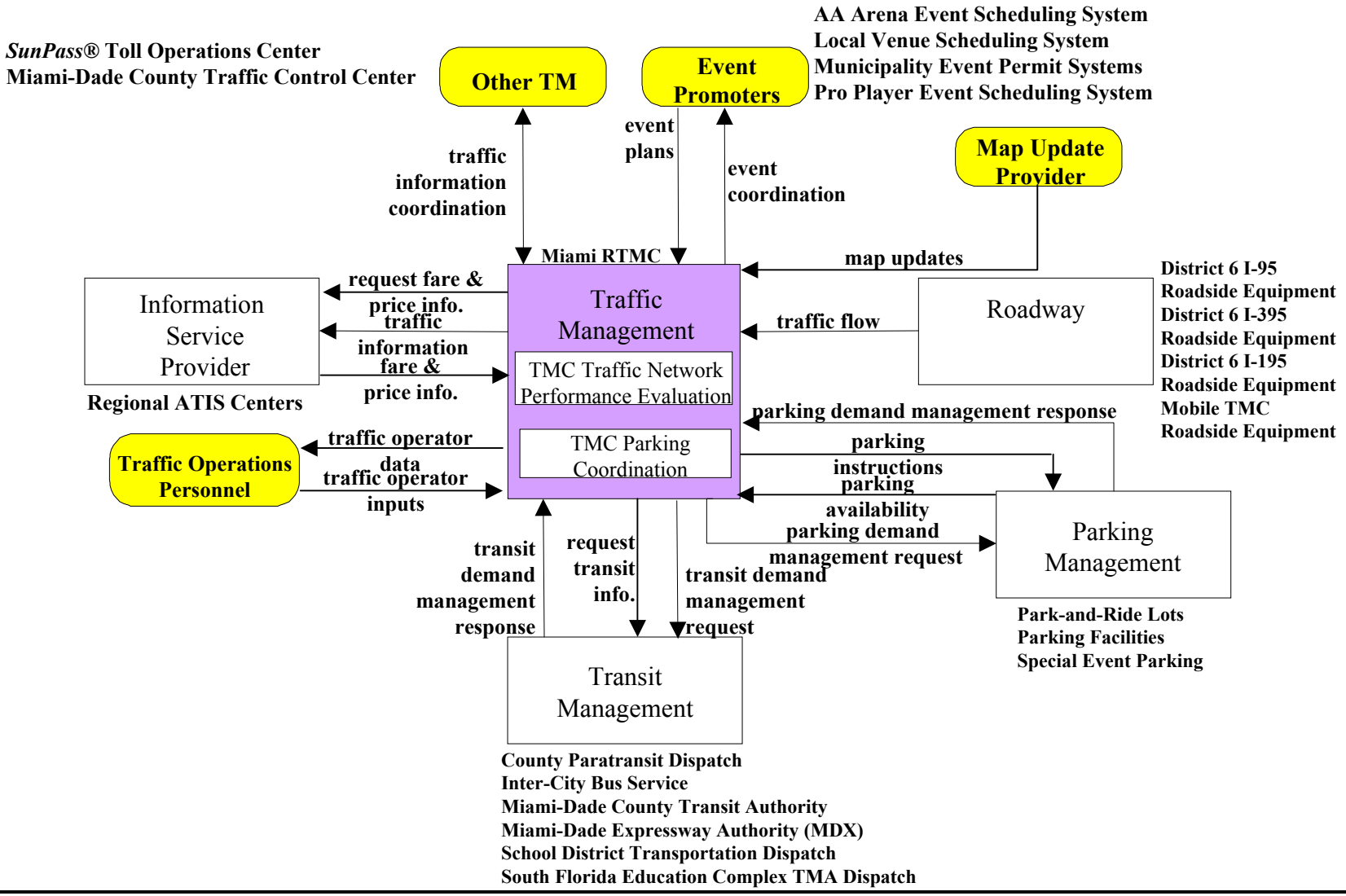
ATMS7 – Regional Traffic Control Market Package



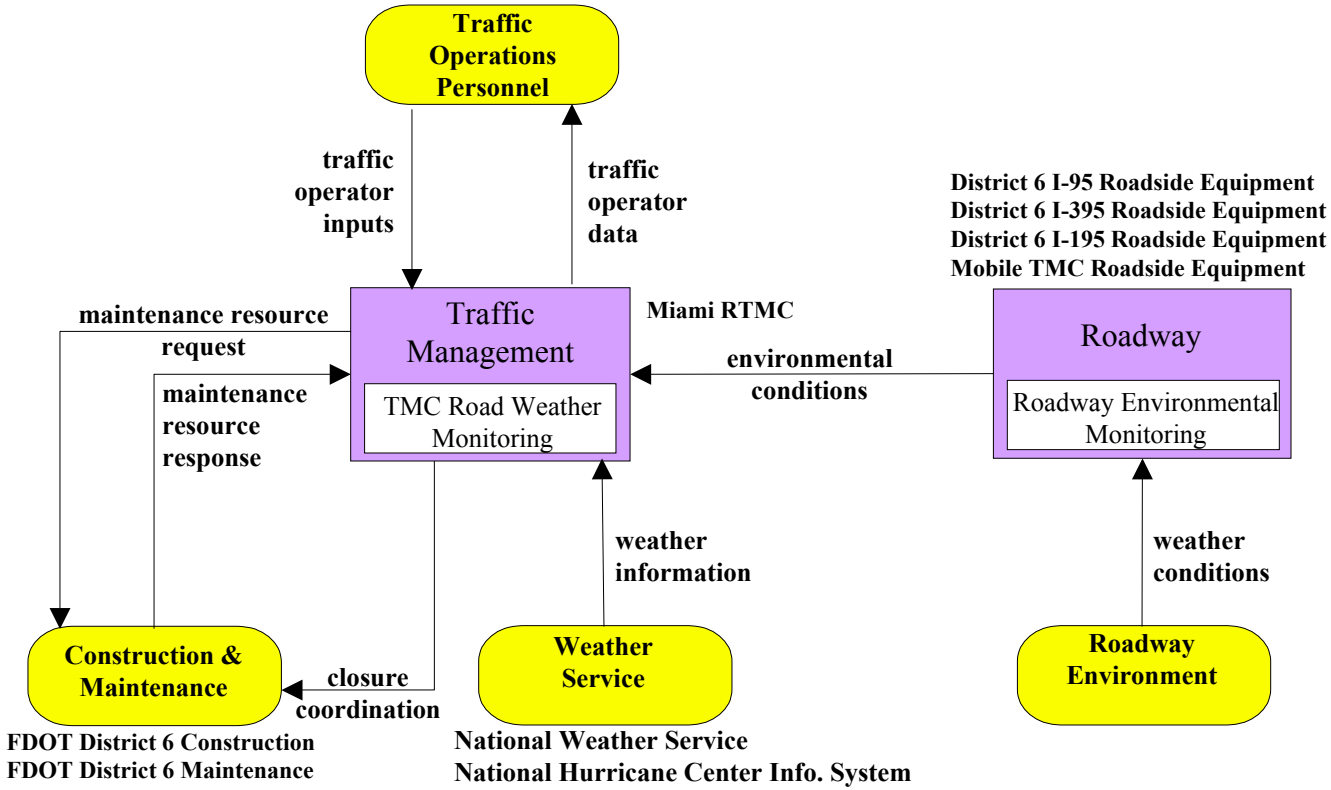
ATMS8 – Incident Management System Market Package



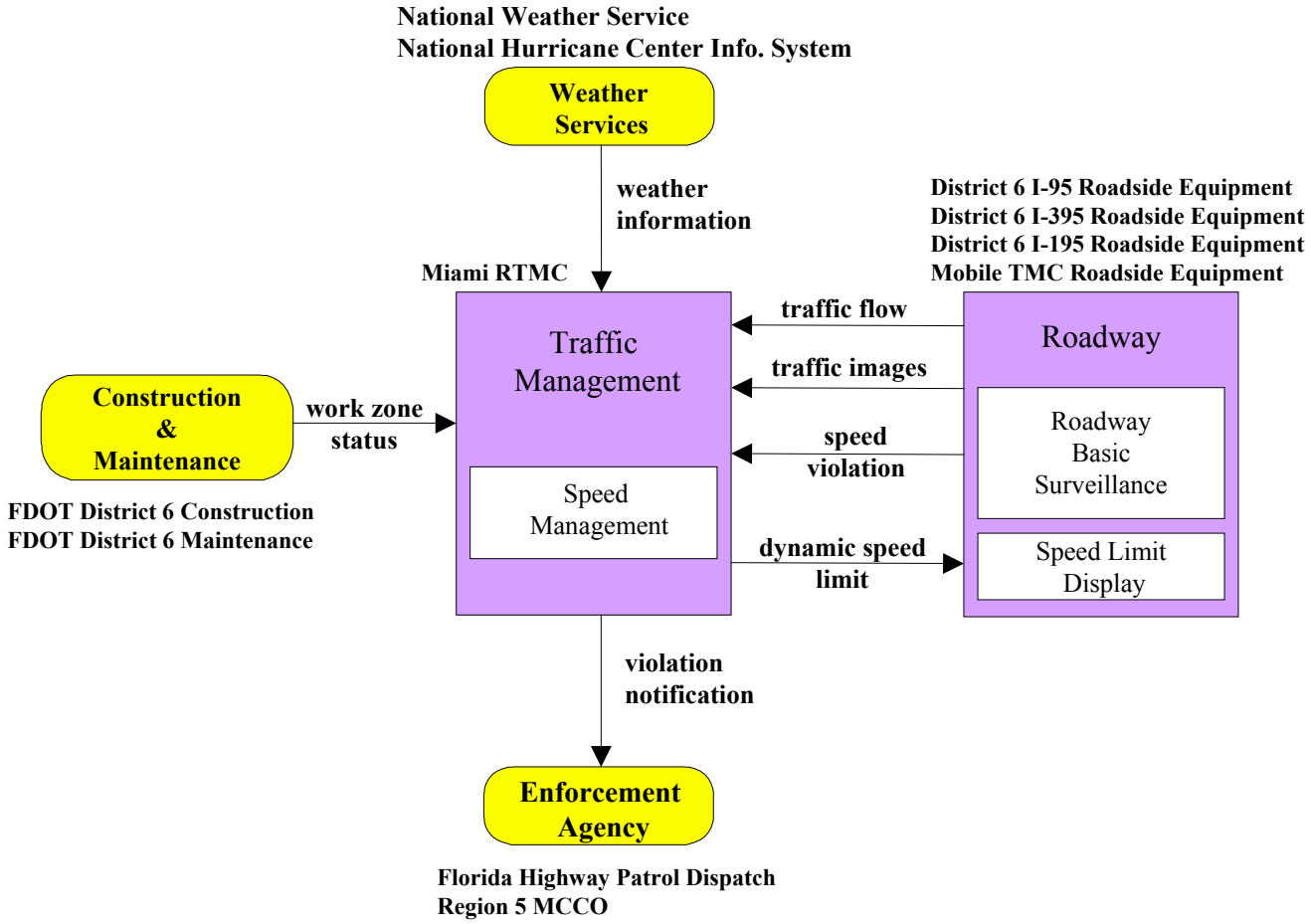
ATMS9 – Traffic Forecast and Demand Management Market Package



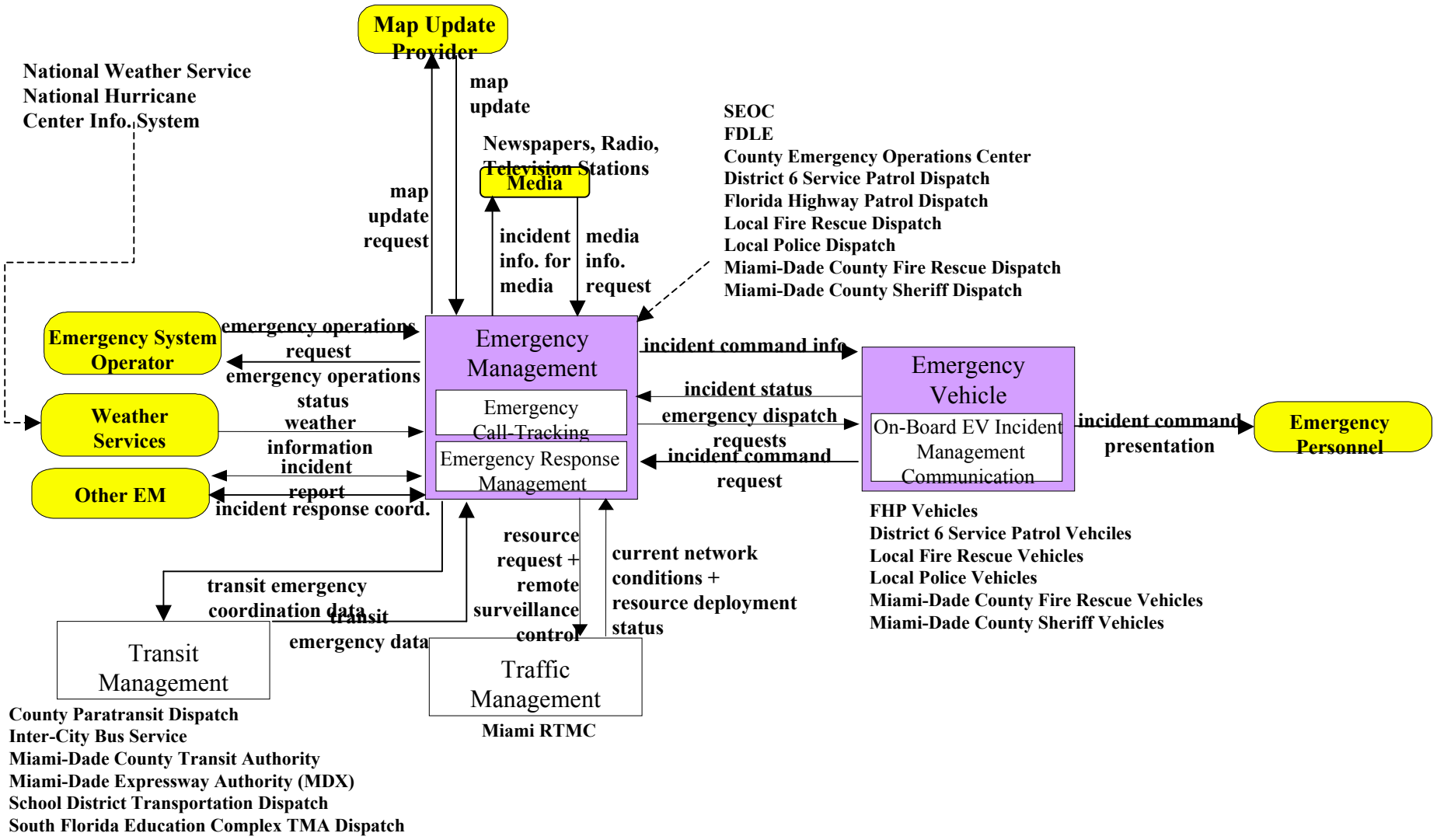
ATMS18 – Road Weather Information System () Market Package



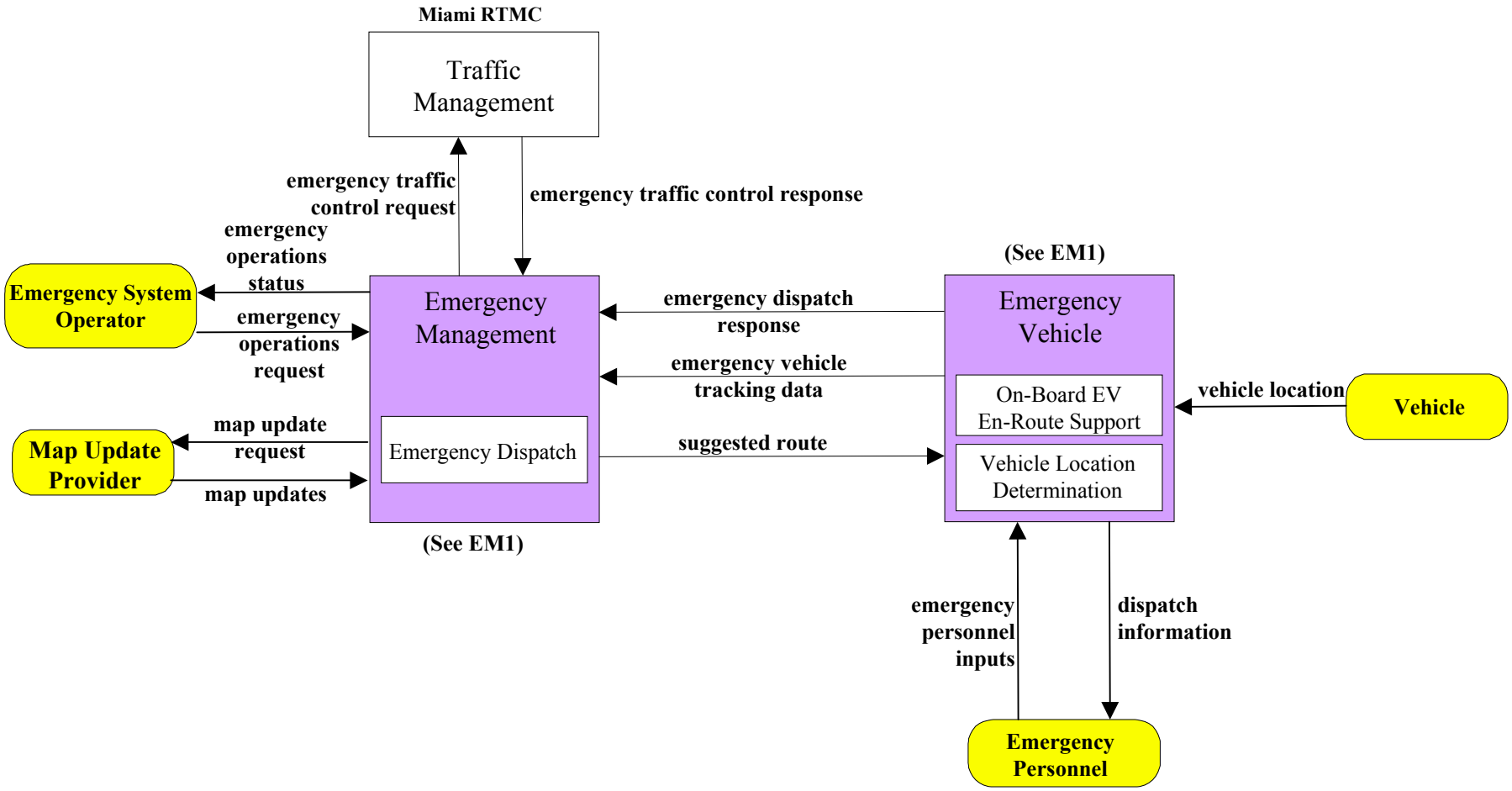
ATMS20 – Speed Management Market Package



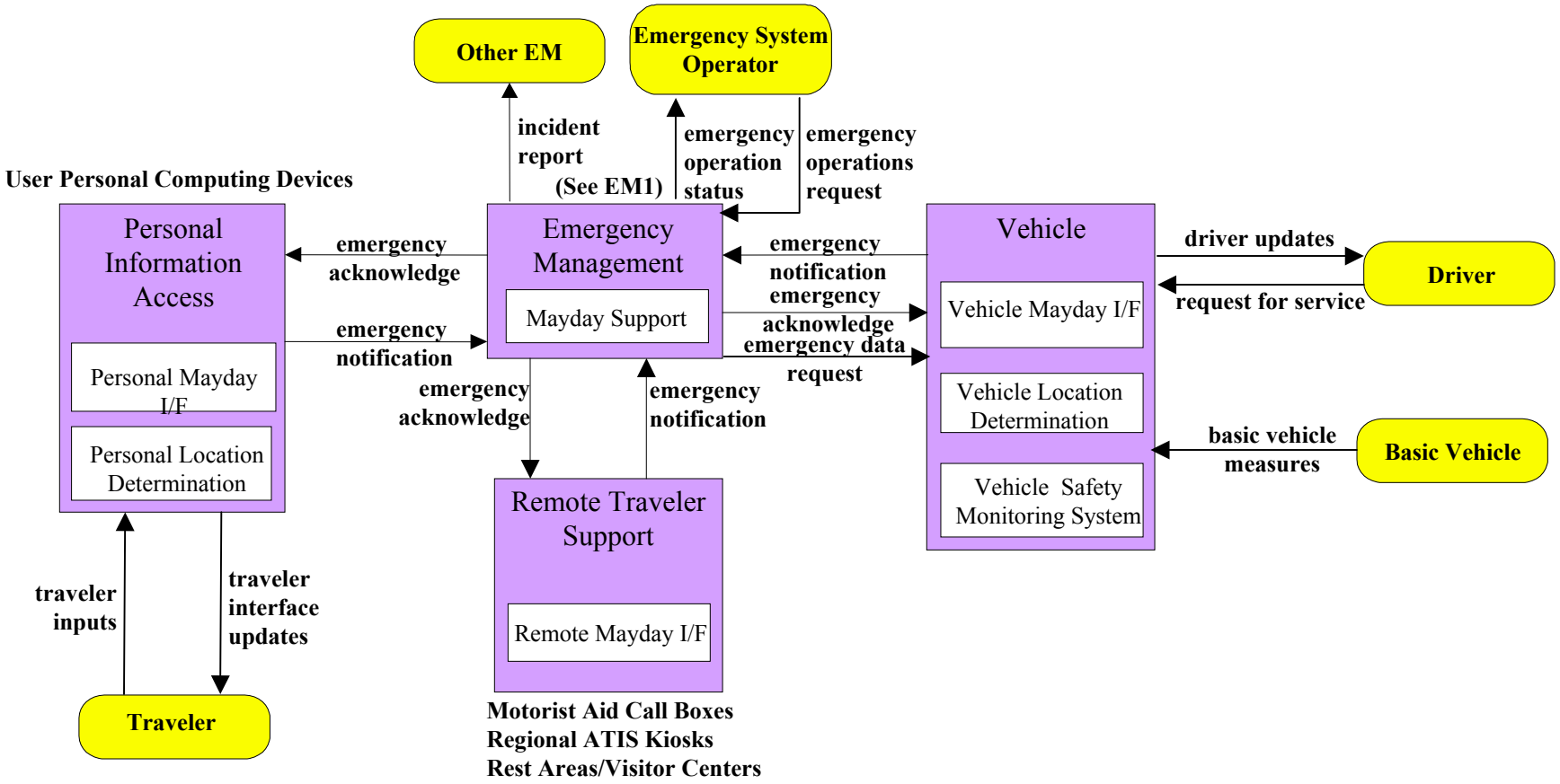
EM1 – Emergency Response Market Package for Service Patrol Providers



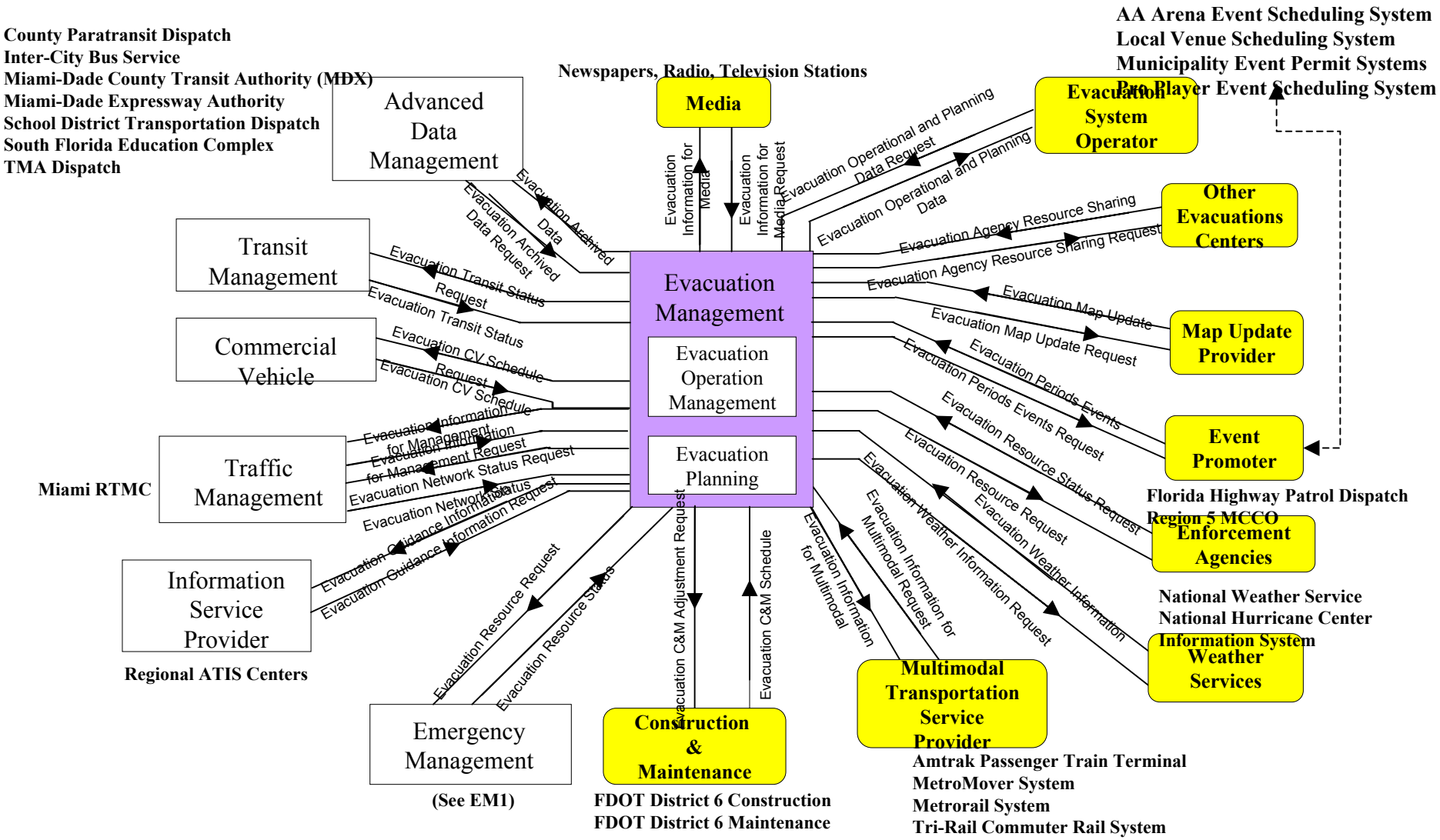
EM2 – Emergency Routing Market Package



EM3 – Mayday Support Market Package



EM4 – Evacuation Management Market Package



Appendix B

ITS Unit Costs

DBCode	DeviceType	Life Cycle	Unit	Construction	O&M Costs	Decription
CCTV	CCTV	10	each	$48,000.00	$2,350.00	Installation including CCTV camera with PTZ control, CODEC mounting, camera tower and mounting and utilities
DMS	DMS1	10	each	$272,500.00	$11,600.00	Total costs include structure and utlilities for overhead structure spanning one direction of travel (six lane facility assumed)
	DMS2	10	each	$372,500.00	$13,600.00	Total costs include structure and utlilities for overhead structure spanning one direction of travel (six lane facility assumed)
	VMS	10	each	$272,500.00	$11,600.00	Used DMS 1
	AVMS	10	each	$272,500.00	$11,600.00	Used DMS 1
DTBL	DTBL	10	each	$75,000.00	$4,000.00	Based on FHWA Unit Costs Database for flashing beacon sign
LD	IL/LD	10	each	$1,850.00	$162.50	Cost per loop - Based on FHWA Unit Costs Database.
	TTMS	10	each	$18,000.00	$1,000.00	Guess - hold for Harshad's response
RTMS	RTMS	10	each	$6,000.00	$400.00	Based on FHWA Unit Costs Database
	CC	10	each	$1,850.00	$162.50	Used IL/LD
	VD	5	each	$40,785.45	$300.00	Capital cost estimate based on Amtech probe sensors, data collection, processing and ISP connection per site from I-4 corridor study. O&M costs estimated from the FHWA Unit Cost Database
VIDS	VIDS	10	each	$30,000.00	$400.00	Based on FHWA Unit Costs Database
	VID	10	each	$30,000.00	$400.00	License plate reader system with same price as VIDS

DBCode	DeviceType	Life Cycle	Unit	Construction	O&M Costs	Decription
Call Boxes	CCB	10	each	$4,000.00	$50.00	Assume all new boxes are cellular.
	MCB	10	each	$7,500.00	$150.00	
ESS	AIS/ESS			$20,000.00	$1,000.00	Basis from D7 Plan
RWIS	RWIS	10	each	$52,000.00	$3,500.00	Environmental sensor consisting of pavement temperature sensor, subsurface temperature sensor, preciptation sensor, wind sensor, air temperature and humidity sensor and visibility sensor
RMS	RMS	5	each	$56,000.00	$3,500.00	Per meter (on-ramp) basic assembly from FHWA (50k), plus loop detectors(2 @ 6k)
HAR	HAR	10	each	$32,000.00	$1,000.00	
Fiber	FON	20	each	$230,000.00	$1,000.00	roadway, 1/2 mile spacing on pull boxes, within right-of-way, Inside plant every 2 miles based on SONET nodes with multiplexers, support equipments, utilities and installation
	TOWER	20	each	$150,000.00	$1,700.00	Microwave system tower, unit cost from FDOT needed.
AL	AL	20	each	$70,000.00	$400.00	Standard twisted copper wire installation.
HUB	HUB	10	each	$107,500.00	$1,000.00	Based on SONET node with multiplexer, support equipment, utilities and installation per site, typical spacing 2 miles
	HUR	20	each	$300,000.00	$6,000.00	Per on-ramp along corridors with one-way operations
	VWIM	10	each	$344,000.00	$109,750.00	Per location per direction, includes electronic clearance, overheight and overwidth detection
Detector Area	Detector Area	10	each	$1,850.00	$162.50	Same as loop detector.